The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

VOL. XIV. No. 352 MARCH 13, 1926

Prepaid Annual Subscription: United Kingdom, £1.1.0; Abroad, £1.6.0.

Contents

NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

The prepaid subscription to THE CHEMICAL AGE *is 21s. per annum for the United Kingdom, and 26s. abroad. Cheques, Money Orders and Postal Orders should be made payable to Benn Brothers, Ltd.*

Editorial and General Offices—8, *Bouverie St., London, E.C.4.*

Telegrams: "Allangas, Fleet, London." Telephone: City 9852 (6 lines)

Our German Visitors

THERE is still considerable mystery respecting the visit to this country of German representatives of the Farbenindustrie, but some points are already clear. It is officially announced this week, in almost the identical terms we published some time ago, that no negotiations exist between the I.G. and the British Dyestuffs Corporation and that at the moment no such negotiations are contemplated. So far, therefore, as the greatest unit in the British industry is concerned, no importance need be attached to the visit. Our German friends, however, have been here on business, apparently two parties of them. Some of them returned a few days ago; others remained behind and may be here still.

There is no definite information as to the purpose of their visit, but two objects are suggested. One is the negotiation of a German dyestuffs loan, preliminary particulars of which were published some time ago. These were of such a definite character that they can hardly be dismissed as purely speculative, and after the success of the German potash loan the desire to raise British capital for German dyestuff enterprise is quite intelligible. At the same time there is this important difference between the two cases. Germany had practically a monopoly of the natural potash deposits; the German monopoly of dyestuffs has been broken by the steady development of production in other countries—to such an extent, indeed, that world production has more than overtaken world consumption.

The second suggestion is that exchanges of opinion may have been taking place between German interests and representatives of what are known as "independent" British firms. We have no positive knowledge on this point, but on the view, strongly held in some quarters, that the British industry should always be regarded as a national entity it is quite possible that some action with this end in view may have been taken. Cases have been brought to our notice in which people have invested capital and energy in the industry with an honest desire to serve the national interest, and in the belief that they would be reasonably supported. Something may be said for the equitable recognition of such enterprise in any collective understandings arrived at between this and other countries. The situation at present is a little hazy, and from some points of view not free from anxiety, but presently, no doubt, more exact information than is at present available will be disclosed.

Problems of Sulphate Caking

IF illustrations were wanted of the room that still exists for the study of the causes of caking in sulphate of ammonia they were amply provided by the discussion on the subject that followed a paper read by Mr. G. J. Greenfield at a recent meeting of the Northern Section of the Coke Oven Managers' Association. One would feel fairly sure of one's ground in associating the troublesome property of caking with certain conditions of crystal size and moisture, but some apparently do not accept these conditions as the only causes, and it is, in fact, suggested that the presence of impurities such as pyridene has an important influence in the matter.

In the present state of our knowledge of this undoubtedly vexed problem it may certainly be conceded that minor and hitherto unrecognised influences may all play their part, but there can be little question that the first attack must be made by way of crystal structure and the production of as nearly as possible a non-hygroscopic salt. Mr. Greenfield pointed out that if we compare a coarse grained salt and a fine grained salt, it is evident that the coarse grain presents less surface per unit of weight, and is, therefore, less capable of attracting moisture. Also, it will have less contact between crystals, and accordingly there is less chance of their cementing together. When, however, a coarse salt contains fines, the fines fill the interspaces between the larger grains. It is well known, of course, that drying processes that involve considerable grinding of the crystals and production of fines yield a salt parti-

cularly liable to cake. For this reason it is better to make a salt of small but even size than one containing large crystals mixed with powder.

As regards some of the methods of neutralisation now in use it is interesting to hear that on changing from soda ash to ammonium carbonate as a neutralising medium the salt was found to be far easier to dry under otherwise similar conditions, while there was less tendency to break up in the dryer. Whatever the method involved, however, there are those who still contend that owing to the influences that intervene after the material has left the producer—influences over which the producer has no control—caking will never be entirely eliminated, and the most which can be hoped for is to prevent any caking taking place prior to the salt leaving the maker's storehouse.

According to Mr. Greenfield, the ideal of producing a salt that will arrive, say, in Japan in perfect physical condition will only be approached when it is possible to make the crystals of a perfectly uniform size, when they are cooled immediately after drying and before they are stored or bagged, and when all parcels in a shipment contain the same amount of moisture. In Germany the problem is being attacked from a rather different angle, and it is proposed to add an insoluble powder, such as kieselguhr, to the crystals in order to preclude the absorption of moisture. The exact proportion of the added material which is necessary is not, however, disclosed, and here again caution would, of course, have to be exercised owing to the reduction of nitrogen content which would follow the intermixture of any appreciable quantities of an adulterant. The transport difficulty is, in fact, equally as important as the manufacturing difficulties, and unfortunately the manufacturer's responsibility does not cease when the material, maybe in the best of condition, leaves his works.

The Claude Process in America

CONSIDERABLE interest is being shown in America in the first unit of the new synthetic ammonia plant which has been erected at Charlestown, West Virginia, by Lazote, Inc., a subsidiary branch of the du Pont Co., and which is on the point of being brought into operation. It has been designed on the basis of the Claude process, a distinctive feature of which are the exceptionally high pressures employed, and the first unit has an estimated production capacity of 25 tons of anhydrous ammonia per day, approaching in terms of sulphate of ammonia nearly 100 tons. The plant has been so arranged as to permit of rapid expansion, and the enterprise promises enormously to increase the American output of synthetic ammonia. With several other synthetic plants in operation, it seems probable that presently America's difficulty will be to discover sufficient new uses to keep pace with production.

The details of the Lazote plant published in technical journals interested in industrial chemistry enable some idea to be gained of its general characteristics and lay-out. Both rail and water transport, we are told, are available. The principal structures are the boiler house, for the generation of process steam; the generator house for the production of water gas; the factory building, for the purification and compression of the gases and the synthesis of ammonia; two gas holders, one for water gas and one for hydrogen; condensers and Cottrell precipitators for tar removal; and the cork-insulated ammonia storage house containing Hortonspheres. A notable feature of the process is the use of water gas, generated from local bituminous coal, as a source of hydrogen. The total generating capacity is 8,000,000 cubic feet of gas per 24 hours. Tar is removed in scrubbers and a Cottrell precipitator, after which the gases—principally hydrogen, carbon monoxide, methane, nitrogen, and carbon dioxide—are compressed for purification and fractionation. Carbon dioxide is removed by scrubbing and final absorption in solid caustic soda, and the methane and carbon monoxide are liquefied in a Claude column and sent to the boiler house for fuel. The purified hydrogen is burned in air in a specially designed combustion chamber, the mixture being controlled to yield hydrogen and nitrogen in suitable proportions for ammonia synthesis. The mixed gases are then compressed to 1,000 atmospheres and sent to the catalyst bombs where ammonia is synthesised. The resulting liquid is weighed and pumped to the storage house where it is confined under about 25 lb. pressure in Hortonspheres. Ammonia vapour from the latter is continuously withdrawn to a refrigerating unit for liquefaction and returned to the containers. Shipments of anhydrous ammonia will be made in specially constructed insulated steel tank cars.

Owing to the high pressures applied to the gas mixtures, safety devices have received special attention. For example, while the compressors, four of which reach a thousand atmospheres, can be started only by pressing a button at the side of the compressor, they can be stopped from several remote places. This arrangement makes it most unlikely that a compressor will be started before every one is clear, while in case of accident it can be stopped from several distant points. Care has been taken to avoid the possibility of gas collecting in pockets, and the buildings are provided with a ventilating system of great capacity, making it possible to change all the air in a few minutes. The small bombs in which the essential reaction takes place are located in heavy concrete structures placed outside the building for additional safety. The engineering difficulties of the enterprise appear to have been successfully overcome, though actual large-scale production will constitute the final test. If the designers' expectations are realised, it would be of immense value to have a detailed comparison between the Claude process, as installed by the Lazote company, and the modified Haber process, as operated by Brunner Mond and Co., at Billingham. But this, we fear, is hoping for too much.

Carbon Dioxide as a Refrigerant

AN inquiry, which we lately received from a correspondent in connection with the commercial uses of carbon dioxide, brings to mind the work that has lately been done in Canada where this substance in the solid form has been turned to considerable use as a refrigerant. The consumption of ice, particularly in the Colonies, has been increasing rapidly in recent years; but, as has often been pointed out, it is not the

ideal refrigerant, while mechanical refrigeration presents the drawback of costliness. From the chemist's standpoint it is interesting to note, therefore, that at the last annual meeting of the chemical branch of the National Research Council of Canada attention was drawn to the merits of solid carbon dioxide which, it is claimed, has all the desirable properties of ice and none of the disadvantages. In the first place, it changes directly to a vapour, absorbing more than twice the heat of melting ice per unit weight. Its specific gravity is nearly twice that of ice, for equal volumes; hence it has four times the cooling effect. This means that it can be stored in a very small space and will lose heat but slowly, owing to the limited surface. With specially designed refrigerators a weight of 100 lb. of solid carbon dioxide has been found to perform the duty of nearly a ton of ice. The advantages of carbon dioxide make it particularly suitable as a refrigerant during transportation.

Solid carbon dioxide is now produced from flue gas containing a high percentage of that compound. The gas is compressed and separated from water and other impurities, then expanded in a specially-designed gas turbine, from which it emerges as snow. This is compressed into blocks, while the gases are returned for further cooling of the flue gas. The difficulties associated with the process are largely mechanical, but they appear to have been entirely overcome by the Canadian workers, and the process provides another illustration of the resourcefulness of the chemist in turning waste products to commercial account. It is not, of course, suggested that the production and use for this purpose of solid carbon dioxide is a novelty, but we believe that Canada is the first country to have embarked on the use of it on a really large scale.

Chemical Research Developments

Two notable additions are announced this week to the existing facilities for chemical research. The first is an Institute of Bio-chemistry at the Middlesex Hospital, towards the endowment of which Mr. S. A. Courtauld has given a donation of £30,000; the second is a small research laboratory at Dudley House, Covent Garden, established by the Department of Scientific and Industrial Research. Bio-chemistry is one of the fields to which increasing attention has been paid in recent years; more and more chemists have been turning for guidance and illumination to the perfect chemistry of life. Already results have been achieved in this realm which have been of untold value in the treatment of disease, and there is a vast bacteriological world still awaiting exploration. There are no limits to the possibilities here, and such gifts as that of Mr. Courtauld come as a real stimulation to the research spirit. The other laboratory for the study of fruit problems is an incidental reminder of the wide range of industrial research work now directed by the Department, and the soundness of the experimental lines on which it has steadily developed. The laboratory will work in close association with the Low Temperature Research Station at Cambridge, the resources of which will thus become available for the study of problems relating to the transport and storage of fruit and vegetables. Covent Garden is a natural centre for such work. Fruit and vegetables can be studied there at all periods of the year, the supplies are derived from all quarters, and it is in direct touch with the main producing areas at home and the chief ports to which overseas supplies are brought.

The Calendar

Mar.		
15	Institution of Automobile Engineers (Scottish Centre): "The Production of Oil." Dr. W. R. Ormandy. 7.30 p.m.	Royal Technical College, Glasgow.
16	Birmingham University Chemical Society: "Valency." Dr. N. V. Sidgwick.	Birmingham.
16	Institute of Metals (Sheffield Section): "Aluminium: Where and How it is Made." G. B. Brook. 7.30 p.m.	The University, Sheffield.
16	Northern Polytechnic Chemical Association: "Electric Furnaces and their Various Uses" (Experimental). W. B. Clements assisted by E. A. Franklin.	Holloway, London, N.
16	Society of Chemical Industry (Birmingham and Midland Section): Annual Meeting. Communications from The Department of the Bio-chemistry of Fermentation. Professor A. R. Ling.	The University Buildings, Edmund St., Birmingham.
16 and 23	Royal Institution: "The Growth of Crystals." Cecil H. Desch. 5.15 p.m.	21, Albemarle Street, London.
17	Leicester Literary and Philosophical Society (Chemistry Section): "The Crystallisation of Metals." Professor C. H. Desch.	The Museum, New Walk, Leicester.
17	Society of Chemical Industry (Newcastle Section): "Bitumen, its Use in Road-making and Methods of Examination." J. W. Craggs. 7.30 p.m.	Armstrong College, Newcastle-on-Tyne.
17	Society of Chemical Industry (Nottingham Section): Annual Meeting. "The Action of Some Pigment-Producing Micro-Organisms on Fabrics." H. S. Holden and H. H. Barber. "The Action of Micro-Organisms on Silk." T. F. Heyes. 7.15 p.m.	University College, Nottingham.
18	Royal Society: Papers by S. Chapman, J. Topping and J. Morrall, A. O. Rankine, G. I. Finch and L. G. Cowen, C. N. Hinshelwood and W. K. Hutchison. 4.30 p.m.	Burlington House, Piccadilly, London.
18	Institute of Metals (London): "The Preparation and Structure of Wires of Pure Tungsten." Dr. C. J. Smithells. 7.30 p.m.	85–88, Minories, Tower Hill, London, E.1.
18	Chemical Society: Ordinary Meeting. 8 p.m.	Burlington House, Piccadilly, London.
18	Birmingham Metallurgical Society (Members of Society of Chemical Industry invited to attend): "Some Recent Advances in our Knowledge of Gaseous Combustion." Professor W. A. Bone. 7.15 p.m.	Chamber of Commerce Buildings, New Street, Birmingham.
19	Society of Chemical Industry (South Wales Section): Annual General Meeting.	Technical College, Mount Pleasant, Swansea.
19	Society of Chemical Industry (Manchester Section) Joint Meeting with the Liverpool Section: "Structural Chemistry of the Higher Fatty Acids." T. P. Hilditch. 6 p.m.	University, Liverpool.
19	Oil and Colour Chemists' Association (Manchester Section): "Fastness to Light—the Need of Standards." Dr. H. J. Stern	Textile Institute, Manchester.
19	Society of Dyers and Colourists (Manchester Section): "The Fastness of Dyes on Silk." Alan Crummett. 7 p.m.	36, George St., Manchester.

Oil and Colour Chemists' Annual Dinner

Research Problems before the Industry

THERE was a large attendance at the eighth annual dinner of the Oil and Colour Chemists' Association at the Grand Hotel, London, on Wednesday, March 3. Dr. H. Houlston Morgan (President of the Association) was in the chair.

Unsolved Problems

Proposing "The Oil and Colour Chemists Association," Sir FRANK BAINES said that after listening to the recent lecture of the President (Dr. Morgan) at the Royal Society of Arts he had come away convinced of his absolute ignorance of the materials which he had used throughout his technical career, but that impression was only equalled by the extraordinary scientific detachment with which Dr. Morgan explained the ignorance also of the oil and colour industry. That indicated that the industry was crying out for scientific inquiry, and he was glad to learn from Mr. Selby Wood that all the arrangements for raising a fund for the development of scientific inquiry into the various aspects of the industry were in a satisfactory way towards accomplishment. The first and most important duty of industry was to help itself and not necessarily rely upon the Government. The Department which he had the honour to serve spent hundreds of thousands of pounds annually on the mere covering of buildings with the materials of the paint and varnish industry, and yet they were not absolutely in a position, as a Department, to lay down whether, when a raw material failed, it was due to the pigment or the medium. It was thus essential that some form of scientific inquiry should be undertaken in order that this fundamental knowledge be acquired.

As a public official, there were certain problems which he had to deal with concerning the great historic buildings of the country which were national possessions. There was, for instance, Greenwich Hospital, one of the great monuments of this country. In the Great Hall there was a ceiling painted by Ferrio Thornhill which was showing definite evidence of failure. The failure was threefold. One of the causes of failure was purely mechanical and physical, because the key of the plaster upon which this great painting was placed had gone. That was being dealt with by the great assistance of Dr. Stradling, of the Building Research Committee of the Department of Scientific and Industrial Research. Further than that, the painting was flaking and what was to be done? The painting apparently was attached to the plaster in a very imperfect way. What was to be done with that painting, in which there were great masses of "bloom," and how could that "bloom" be eliminated without endangering the picture? Again, if it were reconditioned in any way, could that be done without altering the matt surface? He felt that an association such as theirs should be able to answer such questions.

There was another famous ceiling in the Queen's House at Greenwich Hospital painted by Gentileschi, one of the two great ceilings by that artist which existed in this country. Some twelve or fourteen years ago the ceiling was treated by a great chemist, Professor Church, but it was now in an infinitely worse condition than it was then and looked just like a ragged tatterdemalion. The whole of the surface was peeling, and the protective medium which had been put on years ago seemed to have induced surface tension in the colour and produced failure of great areas of the picture in a most disastrous fashion. Again, he asked the oil and colour chemists what was to be done, because similar difficulties were being encountered at Hampton Court. Yet another reference might be made to the same kind of trouble. There was the problem of the preservation of those wonderful thirteenth and fourteenth century paintings in the Chapter House at Westminster, remarkable as the only survivals of that kind of technique in this country, and yet they were failing. These were painted on stone which had been treated with barreter water, and the varnish again was inducing a kind of surface tension which was peeling off the film of the paintings. These were instances of what was being experienced in regard to our public buildings, and he felt that it was only by scientific research on the part of those engaged in the oil and colour industry that such problems would be solved.

Co-operative Research

Dr. H. HOULSTON MORGAN, replying to the toast, said that Sir Frank Baines had certainly put a few posers to the industry in regard to the historic ceilings to which he had referred. The oil and colour industry had not much immediate hope of solving them, but they hoped to be able to do so in time, and those engaged in the industry could not be other than heartened and encouraged by the feelings of good fellowship that had been expressed by Sir Frank. Twelve months ago, on the occasion of the annual dinner of the Association, the keynote of the various speeches was co-operation between the scientific societies and the commercial organisations of the industry. Within a few days of that dinner the Association had begun to act upon the suggestions that had been made, and he thought the Association could look back on the past year with feelings of satisfaction and legitimate pride. Bearing also on the question of co-operation between scientific societies, he was privileged to make the announcement that evening that the Association had received the hall mark of distinction of chemical societies, in that it had been received within the fold of that august body, the Federal Council for Pure and Allied Chemistry, and in all sincerity the Association appreciated the honour. There had also during the year been close co-operation with the Society of Chemical Industry with regard to the preparation and publication of abstracts and annual reports. Next, he wished to refer to the co-operation with the National Federation of Paint and Varnish Manufacturers in the establishment of an Industrial Research Association. He could not help recalling the attitude of the Federation a few years ago when the Oil and Colour Chemists first suggested a measure of co-operation in a certain matter. The chemists then did not seem to be regarded as of much importance in the industry, but happily that attitude had passed away.

Those Cellulose Lacquers

Where three or more were gathered together in the name of the oil and colour industry there would always be some reference to what were known as cellulose lacquers, upon which Sir Frank Heath had been making some remarks, so it was reported, in Australia. The paint and varnish industry almost seemed to be regarded, by some people, as a modern Jericho which, within the next few years, would fall down at the blast of the lacquered trumpet. Whilst he himself had at times been faced with waves of pessimism with regard to the future of drying oils, he had never despaired of the dwellers of Jericho suitably repairing their walls, if they would only embrace the true light of knowledge. He had repeatedly expressed the view that the industry could combat all these new problems if those engaged in it only knew more about their own basic materials. It was not sufficient to acquire knowledge themselves; it must be shared with the public. They must take their customers more into their confidence and tell them as much as possible about the materials which the industry sold. Extravagant ideas with regard to many of the so-called new discoveries thrived on ignorance, and the antidote to quacks and quackery was knowledge. Therefore, he maintained that it was within the power of the industry to withstand the blast of the lacquered trumpet and all such brazen noises.

A Word of Caution

Mr. H. T. TIZARD, of the Department of Scientific and Industrial Research, asked by the President to make a few remarks in the absence of Sir Frank Heath overseas, said he could only, on this occasion, generalise on the question of scientific research in regard to the paint and varnish industry because he was not so completely familiar with it as to be able to deal with the matter in detail. From the few inquiries he had been able to make, it was evident that there was a great and growing movement for the establishment of a research centre in the industry, and he appealed to all present, both as an Association and as individuals, to support that movement as fully as possible. The two industries which had made the most spectacular advances during recent years were aeronautics and wireless telegraphy, and this progress could only be attributed to the vast amount of scientific research that had

been carried out in connection with those industries. At the same time, it was essential to point out to all who embarked upon co-operative scientific research that results did not come quickly, and it was necessary to see that the desire for quick results was not overdone. It was essential to look forward not one year or three years, or even five years, but longer still. It was necessary to make a general start in the industry with a great centre of intelligence so that those engaged in it could be six months ahead of other countries and not six months behind. That being the great aim, we could not look for quick results. The aim should be to build up a really strong and intelligent centre for the industry, and that could not better be done than by the formation of a research association.

Dr. J. N. GOLDSMITH proposed "The Guests," and coupled with the toast the names of Mr. W. J. U. Woolcock (President of the Society of Chemical Industry) and Mr. A. Selby Wood (President of the National Federation of Paint, Colour and Varnish Manufacturers).

Mr. WOOLCOCK, who made the first reply, said that if the sentiments expressed by Sir Frank Baines, Dr. Morgan, and Mr. Tizard could only be brought together and given practical effect to, a means would probably be found for a solution of many of the difficulties of the oil and colour industry.

A War-time Service

Mr. A. SELBY WOOD (President of the National Federation of Paint, Colour and Varnish Manufacturers), who also replied, recalled that during the war one of the problems put before the Federation at very short notice was how to find a substitute, in making paint, for linseed oil, which was then very difficult to obtain, and when it was obtained was required for other purposes. As one of the members of a committee formed to deal with the matter he suggested calling in some of their chemists. Mr. Carwood, who was later honorary secretary of the Association, was one of the first chemists to be consulted, and he and his colleagues rendered the country very great service by evolving what was probably the best substitute for linseed oil, under the difficult conditions that prevailed, although he trembled to think what Sir Frank Baines would have said if one of his pet buildings had been covered with such a paint and he had examined it in two years' time. Out of that calling together of the chemists arose the Oil and Colour Chemists' Association, and in eight years it was apparent how the Association had progressed.

The final toast was that of the Manchester Section, coupled with the name of Mr. J. B. Shaw.

An Institution of Fuel Technology

Organising Committee Appointed

AT a well attended meeting in London on Friday, March 5, under the chairmanship of Sir W. Larke (Director of the National Federation of Iron and Steel Manufacturers), it was decided to form an Institution of Fuel Technologists.

Sir P. DAWSON, proposing the formation of a separate institution, said that he had recently investigated the coal and steel industries of Germany and wished to record that the authorities had offered him every possible facility for investigation. The managing director of a great German steel firm had told him that by scientific application they had reduced their fuel bill by a figure representing 3s. per ton of steel produced. Sir W. REDMAYNE seconded the resolution, which was carried, after discussion in which Dr. E. W. SMITH suggested that a new group of the Society of Chemical Industry should be formed to deal with the question. He had received a letter from Professor Smithells supporting this. Dr. R. LESSING and Mr. D. BROWNLIE spoke against this suggestion. On an assurance by the chairman that the Institute of Fuel Economy Engineers would be represented on the Organising Committee, an amendment on their behalf was withdrawn. It was agreed that there should only be one body and on a national basis.

The following were suggested for an Organising Committee: Messrs. D. Brownlie, E. C. Evans, S. McEwen, P. Hambly, L. C. Harvey, Sir W. Larke, Sir P. Dawson, Dr. R. Lessing, Sir R. Redmayne, Sir E. Slade, Messrs. S. H. North, W. M. Selvey, Dr. M. W. Travers, D. Wilson and Professor R. V. Wheeler. The following, it was hoped, would serve: Lord Montague, Mr. Evan Williams (President of the Mining Association, or a representative of that body), and Mr. C. P. Sparks.

Vulcanisation Accelerator Research

Constitution and Accelerator Action

A JOINT meeting of the Manchester Sections of the Society of Chemical Industry and the Institution of the Rubber Industry was held at the Textile Institute, Manchester, on Friday, March 5. Mr. L. Guy Radcliffe presided over a large attendance. A paper entitled "The Connection between the Chemical Constitution and the Accelerator Action of the Diarylthioureas and Diarylguanidines" was read by Mr. W. J. S. Naunton.

Mr. Naunton said that considering the important practical application of accelerators of vulcanisation, it was surprising that more systematic work had not been done on the question of the connection between their chemical constitution and their potency. It was realised that the liaison between the organic chemical and the rubber industries had not been, until recently, very close, with the consequence that the rubber industry had not the necessary organic chemicals, nor had the chemical industry the experimental rubber plant necessary to test such chemicals.

Two conditions were necessary for the success of such scientific investigations: (1) the substances to be tested must be pure since the presence of other bodies might greatly enhance or depress the true potency—in fact, use was made of this effect in the rubber industry to increase the activity of these agents; and (2) the greatest care was necessary in making the vulcanisation tests. Every operation, from the milling of the raw rubber to the temperature during the testing of the finished vulcanisates, must be controlled and standardised. No test could be reliable unless run side by side with an adopted standard test.

Effect of Substituents

It was found, both in the diarylthiourea and diarylguanidine series, that groups which tended to increase the aromatic nature of the molecule, tended to increase the accelerator activity, whereas groups which intensified the aromatic nature (*i.e.*, electro-negative groups) decreased the potency; thus the dinitrodiphenylguanidines had practically no accelerator action. Hydroxyl groups decreased the activity in a zinc oxide mix, but the metallic salts of such compounds were more active in a pure rubber-sulphur mix than the parent substances. The nitro derivatives were capable of vulcanising rubber in the presence of litharge and the absence of sulphur, but had no interest as accelerators in either zinc oxide or litharge mixes. The basic derivatives, especially in the thiourea series, exhibited marked superiority over the parent substances when used in mixes containing substitute, and also conferred better ageing properties, as demonstrated by rapid ageing at 70° upon vulcanisates containing them.

Mr. Naunton stated that altogether some forty-five derivatives of these chemical families were tested, several of which were described for the first time. Another interesting result was that the introduction of a second thiourea group into the same molecule resulted in a less active accelerator instead of a more active. It must be kept in mind, however, that the increased insolubility of such bodies might partly account for this effect.

The paper was illustrated with lantern slides of the experimental plant installed in the British Dyestuffs Corporation's Rubber Service Laboratory. A simple attachment for recording automatically the loads at given extensions of the dumb-bell in the testing machine was also described.

"Silicolloid": a New Zealand Product

HATHAWAY AND GIMSON, of 9, Courtfield Gardens, London, S.W.5, have sent us a sample of a product called "Silicolloid," together with a descriptive pamphlet. "Silicolloid" is a white, amorphous, silicious deposit occurring at Matapuri, N.Z. It is highly silicious, very free from iron, and may be crumbled in the fingers to a fine powder. It is stated that the average particle is 0·00024 millimetre in diameter, part being truly colloidal. It may be utilised in a number of industries, *e.g.*, paper, plaster, cleansers, toothpaste, soap, polish, toilet preparations, etc. Hathaway and Gimson have a large quantity of the product in London, and would be glad to hear from interested parties.

Modern Grinding Machines

To the Editor of THE CHEMICAL AGE.

SIR,—Might I be allowed to refer to the discussion at the joint meeting of the Oil and Colour Chemists Association and the London Section of the Society of Chemical Industry on "Modern Grinding Machines"?

I am afraid that Dr. Hinchley's experience must have been with cheap foreign machines, some of which are made on the lines of slow running agricultural machinery, but which are sold to run at high speeds and are very soon out of order. I have in mind such a foreign-made machine which I could see would answer the purpose for which I intended it, but it was only after one month's time, labour, and experiment that it was possible to make it workable.

I agree with what he says about the smallness of pulleys, but this can be to some extent obviated by putting the machine on slide rails and using an endless belt, so preventing the bump occasioned by the belt joint—often very badly made—over the small pulley. I have had a long experience of grinding, extending over thirty years, and certainly am of the opinion that Dr. Hinchley's experiments must have been unfortunate. There are many English grinding machines now available which as engineering productions will compare with some of the finest machine tools. Dr. Hinchley warns buyers to take grinding machines to pieces before using them, but this should only be done in the presence of a workman from the manufacturers, because the limits to which they have been made are so fine (in some cases 1/1,000th of an inch) that a small amount of dust in reassembling may upset the fine balance.

If Dr. Hinchley was speaking of foreign-made machines, I am with him to a very large extent. However, it must not be forgotten that one of our competing nations holds the idea that a grinding machine ought not to last more than two years, and that if the user has not made sufficient profit out of it in that period to enable him to pay for a new one, there must be something wrong with his methods. This opinion will "cut no ice" with an English buyer.

Referring to Mr. Klein's remarks, what he says about travellers not knowing their job is quite correct, and I have always held the opinion that when a user did not know exactly what he wanted (and this undoubtedly very often happens), the salesman ought to be in a position to tell him how to arrive at a solution, but there are very few men who have had sufficient experience to enable them to do this. When Mr. Klein says that users are asked to accept existing types of machines, it would be as well to remember the economic question; that altering the design of a machine is costly, and it is quite impossible to meet every user's particular fancy, because almost every buyer will suggest something different.

Apologising for taking up so much of your valued space, I am, etc., E. J. WILSON.

2, Blue Boar Court, Manchester.
March 8.

A Serious Explosion with Potassium

To the Editor of THE CHEMICAL AGE.

SIR,—We were witnesses of an extraordinary and serious accident in the course of an ordinary demonstration on the properties of the alkali metals, of which we think it our duty to inform the scientific public through the medium of your journal.

Mr. H. Russell Ellis, headmaster of this school, was demonstrating to a matriculation class the interaction of sodium and potassium with water. He had successfully shown the usual experiments with sodium, and turned to the bottle containing potassium in the form of balls. Remarking on its appearance, Mr. Ellis proceeded to remove a piece by means of a pen-knife, as he had previously done with the sodium. On inserting the knife into the potassium a violent explosion took place, shattering the bottle to minute fragments and igniting the naphtha that covered the potassium. Mr. Ellis's face was seriously burned and injured by the ignited potassium, and his hands were severely lacerated by the glass. He was conveyed to hospital and afterwards to his home, where his condition remained serious, if not critical, for some days. Glass was found 24 feet from the seat of the explosion.

Every precaution had been taken by the experimenter, who is well known as a skilful practical chemist. We are unable to account for the occurrence of the explosion other than that the potassium, which was many years old, was contaminated with potassium carbonyl, a known explosive impurity in the metal prepared by the old process of distilling a mixture of potassium carbonate and carbon. Our object in making known this unfortunate accident is to warn science lecturers and others of the danger attending the use of potassium.—Yours, etc., J. GERALD F. DRUCE.
EDWARD J. WEEKS.

Battersea Grammar School,
St. John's Hill, S.W.11.
March 8.

Naphthalene as a Motor Fuel

To the Editor of THE CHEMICAL AGE.

SIR,—Your correspondent, Mr. Hugh G. Corr, must, I think, be writing in a humorous vein. There was some time ago, and still may be, on the market a commodity known as "Spots," one or two of which, added to a gallon of petrol, increased everything that was desirable and decreased all the undesirable things in a motor-car or motor-cycle. These consisted of naphthalene, but they were unquestionably of little use.

Does your correspondent really ask us to believe that five grains of naphthalene to one gallon of petrol is going to save fuel by 50 per cent.? According also to his instructions, where he says "for carburetters having one petrol adjustment, reduce flow of petrol from 1 to ½" this indicates that the figure just mentioned—i.e., 50 per cent.—should have been 300 per cent.—Yours, etc. T. G. FRANCIS.

9, Stamford Mansions, Stamford Grove, N.E.
March 9.

Tributes to British Glassware

To the Editor of THE CHEMICAL AGE.

SIR,—Referring to the leading article in your issue of February 27 under the heading "Tributes to British Glassware," we should like to add our testimony to that of Brunner Mond and Co., Ltd., and others. We employ British glass exclusively in all our laboratories and are eminently satisfied. Our chemists assert that for delicate analytical work it is superior to pre-war and post-war continental glass, because it is more durable when exposed to rapid changes of temperature and possesses greater resistance to the corrosive action of chemical reagents.—Yours, etc.,

16, Eastcheap, E.C.3. BORAX CONSOLIDATED, LTD.
March 5.

Death of Founder of Mathieson Alkali Works

MR. EDWARD E. ARNOLD, president of Arnold, Hoffman and Co., Inc., has died at Providence, Rhode Island, aged 72.

Mr. Arnold's connection with the chemical industry extended over half a century. He entered business at Providence, in 1874, as a clerk with Mason, Chapin and Co., wholesale drugs and chemicals, which firm subsequently became a corporation under the name of Arnold, Hoffman and Co., Inc., with Edward E. Arnold, president. In 1892 he founded the Mathieson Alkali Works, of which he was president for a long time. He was president of the Castner Electrolytic Alkali Co. of Niagara Falls, president of Nitrogen Products Co., president of Oneonta Light and Power Co. and of other companies.

Mr. Arnold's interest in nitrogen fixation was, to a very large degree, unselfish. While he would not have been unwilling to obtain a financial return upon his investments his main object in his later years was to seek for a solution of the fertiliser problem. His work on the development of the Bucher process deserves special mention. He became interested in Mr. Bucher's experiments and was the principal financial backer of the Nitrogen Products Co. It was this company which developed the Bucher process at the plant of the Mathieson Alkali Company at Saltville and furnished some liquid HCN to the French Government before the American entry into the war. It was the experience gained in this plant which was utilised in the design of the cyanide plan later built at Saltville by the U.S. Bureau of Mines for the American army. He continued his interest in the cyanide process and also developed a synthetic ammonia process. One small plant is now operating on the synthetic process at the Belle Alkali Company at Belle, W. Va.

Recent Investigations on Fish Oils

Professor Heilbron on Recent Research

PROFESSOR W. H. ROBERTS presided at the annual meeting of the Liverpool Section of the Society of Chemical Industry at Liverpool University on Friday, March 5.

Liverpool Section's New Officers

The following officers were elected: Chairman, Associate-Professor W. H. Roberts; vice-chairman, Mr. E. Thompson; hon. treasurer, Dr. A. Holt; hon. secretary, Mr. E. G. Jones; representative on Chemical Engineering Group, Dr. W. R. Sibbald. Four vacancies on the committee: Dr. J. T. Conroy, Mr. A. E. Findley, Professor T. P. Hilditch and Mr. J. W. Towers. It was reported that since the last annual meeting 27 new members had been elected in the Liverpool area, and the membership of the Section was now about 400. There were only six Associates as against 19 last year. The average attendance at Section meetings showed some increase over that of last year, with an average of 53. The annual joint meeting with the Manchester Section would take place on March 19 and a visit had been arranged to the English Margarine Works at Broadgreen.

Research on Fish Oils

Professor I. M. Heilbron then gave a lantern lecture on the subject of "Recent Investigations on Fish Oils," in the course of which he drew attention to the large amount of research carried out during the past decade on the unsaponifiable matter of liver oils of elasmobranch fish. From some of these a hydrocarbon had been isolated by Tsujimoto and his co-workers to which the name squalene had been given. This substance, the content of which in the liver oil in many cases amounted to as much as 80 per cent., had the molecular formula $C_{30}H_{50}$ and contained six double bonds. It was characterised by the ease with which it formed a hexahydrochloride. Majima and Kubota had shown that on treatment with ozone it readily yielded an ozonide which decomposed, giving laevulinic acid, succinic acid, formaldehyde, and acetone. Further, on dry distillation these authors claimed to have isolated isoprene, together with a monoterpene very similar to *cyclo*dihydromyrcene. The characteristics of squalene and its properties closely resembled those of spinacene, which Mr. A. Chaston Chapman had also obtained from certain elasmobranch liver oils from Portuguese waters and to which he ascribed the formula $C_{29}H_{48}$. More recently André and Canal, from an examination of the hydrochlorides of squalene and spinacene, came to the conclusion that neither hydrocarbon was a single substance, but mixtures of homologues ranging from $C_{28}H_{46}$ to $C_{31}H_{52}$.

During the past three years a very close study of these oils had been made. As a result of this research, carried out in collaboration with Mr. E. D. Kamm and Mr. W. M. Owens, proof had been obtained that only one hydrocarbon was present and that this had the molecular formula $C_{30}H_{50}$. It yielded a mixture of isomeric hydrochlorides from each of which the parent hydrocarbon could be regenerated, and this itself probably existed in isomeric forms. From the fact that on decomposition squalene yielded hemiterpenes, monoterpenes, sesquiterpenes, and diterpenes, ample evidence was provided that it was a typical dihydrotriterpene.

The discovery of this definite terpene in animal life was of great biological interest, and its importance was accentuated by the fact that in a recent paper in the *Biochemical Journal*, Drummond, Channon and Coward proved its presence in the vitamine-active unsaponifiable matter of cod liver oil. Although squalene did not respond to the test for vitamine A, even after irradiation, future work might well show that some definite connection existed between this hydrocarbon and vitamines in general. Vitamine chemistry was still largely wrapped in mystery, but it was known that cholesterol, when irradiated, became active, and certain evidence had recently been adduced in favour of the hypothesis now advanced that cholesterol and squalene, although at first sight wholly unconnected with each other, were in reality related. In this respect it had been found that, although an open-chain compound, squalene might be readily cyclised to a tetracyclic isomer, and it was at least significant that, as Windaus had shown, cholesterol, which was certainly allied to terpenes, also contained four rings.

It would appear that a renascence of terpene investigation was desirable, not alone from the purely chemical aspect, but also from the standpoint of the function of these compounds in physiological processes. When one considered that phytol was an essential portion of the chlorophyll molecule, and that the lipoid pigment carotene was common both to the plant and animal kingdoms, and that both these substances were almost surely terpene derivatives, the fruitfulness of research in the directions mentioned was apparent, and was, in fact, in process of being carried out in those laboratories.

An informal discussion followed in which Professor Hilditch, Dr. Holt, Dr. Kamm, Messrs. E. T. Williams, H. B. Stocks, Mansbridge and E. H. Shepherd took part.

Society of Public Analysts

New Members Elected

AN ordinary meeting of the Society was held at the Chemical Society's Rooms, Burlington House, on Wednesday, March 3, Mr. E. R. Bolton, president, in the chair.

Certificates were read for the first time in favour of Messrs. J. Allan, M. T. Casey, G. H. Davis, J. Grant, and Miss M. M. Ruston. Certificates were read for the second time in favour of Messrs. S. Back, H. H. Bagnall, W. P. Crocker, B. W. A. Crutchlow, A. M. Ferguson, R. H. Klein, O. J. Napier, G. Stubbs, J. H. Williams, K. A. Williams. The following were elected members: Messrs. G. Chignell, H. G. Watts, and Dr. K. Saito.

Determination of Mercury in Solution

"An Accurate Method for the Determination of Mercury in Solution" was the subject of a paper by Dr. B. S. Evans and Mr. S. G. Clarke, in which it was stated that the mercury (in solution as mercurous nitrate) was deposited on copper and then sublimed. The mercurous solution was percolated for 1½ to 2 hours through a special apparatus (see following abstract), the filter tube of which contained a layer of copper filings. The copper, with the deposited mercury, was washed with water, and then with acetone and dried, and the mercury was sublimed on to platinum and weighed. Accurate results were obtained in presence of arsenic antimony or bismuth, and large amounts of copper and nitrates. Hydrochloric acid interferes with the deposition, and had to be removed.

Dr. B. S. Evans also read a paper on "An Apparatus for Continuous Percolation and for Filtration in Neutral Atmospheres," and described processes in which the liquid was made to percolate through a filter tube, with the aid of pressure or suction, into a flask, an open return tube ensuring that the pressure in the main funnel and the flask was the same. When the liquid in the flask reached the end of the return tube a difference of pressure was established, and the liquid was driven back to the main funnel. For filtration in an inert atmosphere a cylinder of the desired gas could be used as the source of pressure.

In notes on the determination of moisture, calcium, and phosphorus in the bones of rats, Mr. A. L. Bacharach gave conclusions as to the influence of diet, etc., on calcium and phosphorus metabolism which were largely based on analyses of the bones of experimental animals.

Important Appointment for Dr. E. C. Edgar

DR. E. C. EDGAR was, on Wednesday, appointed principal of Rutherford Technical College by the Newcastle Education Committee, at a salary of £800 per annum, rising to £1,000.

Dr. Edgar obtained his first-class honours degree in chemistry at Manchester University. Later he took the degrees of M.Sc. and D.Sc. for research work, and was elected an F.I.C. in 1917. After 11 years on the staff of Manchester University he joined the explosives staff of the Ministry of Munitions, with whom he served 11 years. Joining the staff of the Production Control Department after the Armistice, he was sent to take charge of the Bayer chemical factory in Cologne, which employed over 7,000 hands. His duty was to supervise the work and see that there was no improper production of explosives. Returning to England, Dr. Edgar joined the B.D.C. He was for a time on the research department of the British Launderers' Association, and in 1923 joined the staff of the Regent Street Polytechnic, London, as head of the Chemistry school. He hopes to take up duty about July.

Catalytic Production of Fuel Oil

Conversion of Vegetable Oils and Fats

PROFESSOR MARCUSSON, of the State Testing Station at Berlin-Dahlem, criticises the recent work of Mailhe in France, and claims a better and more economical process for the production of hydrocarbons from vegetable oils and fats by virtue of the fact that he uses a lower temperature. Mailhe, for instance, passed vaporised linseed oil at the high temperature of 600° to 650° over a mixed copper-magnesia or copper-alumina catalyst, and obtained, beside various gases, a slightly acid yellowish liquid, boiling between 40° and 250° C. After treatment with alkali to remove the saponifiable portion, the remaining unsaponifiable portion was subjected to fractional distillation, and the fraction of b.p. 70° to 150° C. was hydrogenated in the presence of nickel catalyst at a temperature of 180° C. The resulting product was a colourless inflammable oil of agreeable odour, containing, benzol, xylol, and hydro-aromatic compounds. This in turn is fractionated into a benzine of sp. gr. 0·76 and a light petroleum of sp. gr. 0·86. By this method neither heavy nor viscous oils were obtained. But if the hydrocarbons of b.p. 240° to 280° C. were heated up with zinc chloride before hydrogenation they were partially converted by polymerisation into a viscous oil of b.p. above 330° C. The French scientist has expressed the hope that these reactions might form the basis of a large and important industry in those countries which have no natural resources of mineral oil but where vegetable oils could be produced in considerable quantity.

Marcusson, however, considers the method very expensive, and observes that the hydrocarbon mixture obtained by Mailhe is a secondary reaction, the breaking down of the primary product which consists of heavy oils. In order to produce these heavy oils as final product it is essential first of all to reduce the temperature very considerably, and secondly to avoid distillation which gives rise to these secondary decompositions. A procedure is adopted similar to that employed by Marcusson previously for the production of ceresin hydrocarbons from montan wax. The oil or fat is heated for 20 hours in the sand-bath with one-fifth of its weight of uncalcined kieselguhr or cooking salt. The split products formed are evaporated in a reflux condenser, the temperature not exceeding 300° C. Hydrocarbons are formed, the catalyst is separated out, and the saponifiable portion removed by lye treatment. If linseed oil is used as raw material the resulting product has a sp. gr. of 0·87, but if tallow, consisting mainly of saturated glycerides, is used the sp. gr. is 0·92, and the iodine values are 52 and 29 respectively. Saturated and unsaturated hydrocarbons are the principal constituents, but a certain amount of alcohols and ketones are also obtained, and the whole mixture is of a viscous consistency. It is finally subjected to fractional distillation, and in the case of tallow a yield of 18 per cent. petroleum is obtained at 300° C. The yield with linseed oil is not stated. Even this method with the much lower temperature hardly seems commercially feasible at the moment, but it represents a starting-point in what may eventually prove to be a process of the utmost importance, when the rapidly increasing demand for fuel oil and the declining reserves of natural petroleum render the question of artificial substitutes a vital one.

It will be recalled also that a few years ago an engine was designed, for use in West Africa, in which palm oil could be used as fuel; and a considerable amount of experimental work has been done in France both with palm oil and groundnut oil as fuel. There appears, therefore, to be an important field of research open not only for the conversion of fatty oils into mineral oils for engines as at present designed, but also for adapting the design of the engine to burn fatty oils as fuel without any preliminary treatment.

"A Retrospect"

MR. C. T. KINGZETT, whose name is well-known in connection with his *Chemical Dictionary*, has published a 23 pp. pamphlet under this title, in which he outlines shortly the story of his own career. It is mainly a record of domestic interest but the reminiscences and *obiter dicta* on chemical topics scattered over the pages may appeal to a rather wider circle than the author's personal acquaintances.

Chemical Matters in Parliament

Lead Paint Bill

Sir W. Joynson-Hicks (House of Commons, March 4) said that he hoped very shortly to reintroduce the Bill he presented last session. In reply to questions he would not state whether it would ratify the International Convention.

Synthetic Organic Paints

Mr. A. M. Samuel (House of Commons, March 8) said that in so far as they contained paints of synthetic organic origin, paint-boxes were subject to the Dyestuffs (Import Regulation) Act, 1920. But after consideration of all the circumstances it was recently decided to issue an open general licence covering the importation of all boxes of a value not exceeding 6s. per dozen. He could not hold out any hope of a modification of that decision.

Low Temperature Carbonisation Progress

Colonel Lane-Fox (House of Commons, March 8) said that it was impossible within the limits of an answer to give an account of the progress made. A full progress report was being written for publication with the annual report of the Fuel Research Board. Several commercial plants, of different types, had started working during the year, and others were approaching completion; it was too early yet to form an opinion as to their success. He asked for notice of questions on whether Germany was experimenting on the subject and on the number of commercial plants operating successfully in this country.

Steel Industry Conditions

Sir Burton Chadwick (House of Commons, March 8), in reply to questions, said that he was aware of the conditions in the steel industry, but did not think a conference of all interests would be useful at the moment.

Calcium Molybdate

Sir P. Cunliffe-Lister (House of Commons, March 9), in reply to Mr. A. V. Alexander, said that calcium molybdate had been liable to duty, on importation under Part I of the Safeguarding of Industries Act, since October 1, 1921. He had received no complaints that imports competed unfairly with any manufacture in this country. He was informed that molybdenum steel was not used by the cutlery industry, and the existence of the duty had consequently no bearing whatever on the questions considered in the cutlery inquiry. He could not revise the duty as he considered it vitally important, if a particular constituent part was essential to the production of highly finished steel (as Mr. Alexander said was the case of this substance), to have it produced in this country.

The Coal Commission Report

As we go to Press the report of the Coal Commission is published. Signed by all four members: Sir H. Samuel, Sir H. A. Lawrence, Sir W. H. Beveridge, and Mr. K. Lee, its findings are briefly:—No more subsidy; Standard working day to be unaltered; lower wages if present hours are retained; meetings of owners and men, nationally and sectionally, to discuss wages; Government aid for transferred labour; no nationalisation of mines; State to acquire royalties by purchase where coal is proved, in new fields by declaration as State property; amalgamation of small mines, and the closer association of mines and electrical, gas, and other allied industries; formation of National Fuel and Power Committee; State provision for research; formation of selling agencies; local authorities to have power to retail coal; family allowance system to be formed; profit-sharing should be obligatory; and later, annual holidays with pay.

B.D.C. Capital Reduction

IT is reported that the petition presented to the High Court on December 31, 1925, for sanction for a scheme of arrangement dated November 11 last, and confirmation of the consequent reduction of capital of the British Dyestuffs Corporation, Ltd., from £10,000,000 to £5,578,466, is to be heard before Mr. Justice Eve in the Chancery Division on Tuesday, March 23.

From Week to Week

ASPHYXIATED BY FUMES from a hydrocyanic gas pump which he proposed to use for killing rats, T. Scott, 54, a Beaulieu farmer, was found dead in his barn on Sunday.

DR. W. CULLEN sailed on Friday, March 5, for South Africa, to receive the degree of LL.D. conferred on him two years ago for public work by the University of Witwatersrand.

MR. H. J. YOUNG, F.I.C., has resigned his position as chief chemist to the North Eastern Marine Engineering Co., Ltd., Wallsend-on-Tyne and Sunderland, and has opened an office at 3, Central Buildings, Westminster, London.

ON TUESDAY NEXT, at 5.15 p.m., Professor C. H. Desch will deliver the first of two lectures at the Royal Institution, on "The Growth of Crystals." The Friday evening discourse on March 26 will be given by Sir Ernest Rutherford on "The Radiation from Atomic Nuclei."

THE SECOND NATIONAL CONGRESS of the Italian Association of Pure and Applied Chemistry (Rome) will be held from May 23 to June 2. At the congress the centenary of the birth of Stanislao Cannizzaro will be celebrated. The Associazione Italiana di Chimica Generale ed Applicata, No. 154, Via IV, Novembre, Rome (I), will supply details.

THE CLOSING is announced of the bleach works at Craigton, near, Milngavie, of Blackwoods, Ltd., after over 100 years. The firm was taken over by the Bleachers' Association some years ago and have established works at Springfield, Glasgow, and Arthurlie Barrhead. It is understood that the main personnel at Craigton have been transferred to Arthurlie.

THAT JAPANESE DYE PLANTS WILL CONTINUE to manufacture, although the withdrawal of the Government subsidy will entail keen German and American competition and possibly serious losses, was the opinion expressed at the meeting of the Nippon Senryo Seizo recently. It was thought that the Government would soon take steps to encourage the industry.

A LOSS OF 1,046,086 MARKS is reported in the annual statement of the Sunlicht-Gesellschaft Aktiengesellschaft, Rheinau-Mannheim, Baden, the largest German producer of glycerine, soaps, candles, etc. The company was originally a branch of Lever Brothers, Ltd. The losses are attributed to expenses in connection with the stabilisation of the mark and to high taxes. The condition of the concern is reported to be still good and prospects are satisfactory.

A NEW TYPE OF MEETING, arranged by the Midland Section of the British Association of Chemists, was held at Birmingham on Tuesday, March 2. There was a series of short papers, on "Insect Pests," by Mr. R. V. Wadsworth, on "Optical Glass," by Mr. W. M. Hampton, and on "Yeast," by Mr. W. Salmon. It was pointed out that the object was that members might learn in a popular way of matters relating to out-of-the-way branches of applied chemistry. The contributions were of a kind that did not trespass upon the activities of other chemical societies.

A LOSS OF £750,000 last year is reported by Herr Prornetor, head of the great Krupp concern. Machines and plant, etc., which were destroyed by orders of the Inter-Ally Commission, are estimated at a replacement value of about 104,000,000 marks. The loss on working was chiefly incurred at the Kiel shipbuilding yards, though iron mining in Siegerland and the new machine and locomotive wagon shops at Essen had both shown unsatisfactory results. The Ruhr occupation was held responsible, but Herr Prornetor was moderately optimistic as to prospects.

THE DISCUSSION on "Hydrogen Ion Concentration and its Industrial Significance," was continued by the Yorkshire section of the Society of Chemical Industry, at the University of Leeds, on Monday. Mr. B. A. Burrell, Leeds City Analyst, presided. Dr. W. Macadam spoke on the importance of hydrogen ion concentration in medical problems, Mr. J. T. Thompson, chemist to the Leeds Corporation Sewage Department, described the significance of hydrogen ion concentration in sewage purification, and Mr. F. C. Thompson gave an account of the different methods available for measuring the hydrogen ion concentration of liquids, and discussed their applicability.

SIR ERNEST RUTHERFORD lectured on "Rare Gases of the Atmosphere" at the Royal Institution, London, on Saturday, March 6. The discovery of helium, krypton, argon, neon and xenon, he said, had markedly influenced the advance of science in certain directions, and gave us information of great value on the structure of atoms. This advance, due to the work of the late Lord Rayleigh and Sir William Ramsay, was a great triumph for British science. It was probable that 100,000,000 litres of argon were produced annually throughout the world, mostly for use in gas-filled electric lights. Neon was now produced in considerable quantity. Helium in sufficient quantities to fill an airship was obtained from natural gases both in Canada and the United States. It had opened up a new region of research, where the properties of matter could be examined at such a low temperature that the movements of the atoms and molecules had almost ceased.

A NEW OIL EXTRACTING PLANT is to be erected by the Belvedere Fish Guano Co., Ltd.

RECENT WILLS INCLUDE.—Mr. R. Mathieson, London, director of the Angela Nitrate Co., Ltd., and a trustee for the debenture holdings on Agua Santa Nitrate and Railway Co., £152,748 (net personalty, £151,905).

A NEW ELEMENT occupying the 61st place in the atomic scale is reported to have been discovered by Dr. B. S. Hopkins, Professor of Inorganic Chemistry at Illinois University, U.S.A. He has named it "Illinium" in honour of his university.

A GIFT OF £30,000 has been made by Mr. S. A. Courtauld to the Middlesex Hospital to provide a research and training department to be known as "The Courtauld Institute of Bio-Chemistry." It will be a complete department of medical chemistry.

WALKER, CROSWELLER AND CO., of Dane's Inn House, 265, Strand, London, W.C.2, inform us that in order to deal with constantly growing business they have removed to 54-58, Queen Elizabeth Street, London, S.E.1. Their telegraphic address is now Instrukemi, Boroh, London, and the telephone number, Hop 5786.

A CONFERENCE OF CHINA CLAY PRODUCERS has been convened and will be held at St. Austell, on Wednesday, March 17. Since the dissolution of the Cornwall and Devon China Clay Producers' Association some 18 months ago, many firms have experienced increasing difficulties and it is expected that some working agreements will be evolved next week.

THE AMERICAN CYANAMID CO. has closed an agreement with the Azote Français obtaining exclusive manufacturing rights in Canada, United States, South America and Australia, for the cyanamide manufacturing process owned by the Azote Français. The production of the American company, which now totals 80,000 tons annually, will be quadrupled.

A NEW COMPANY to be known as the Tar Acid Refining Corporation is to be formed by the Monsanto Chemical Works to represent the Graesser-Monsonto Chemical Works, in America. The new corporation, with offices in St. Louis and New York, and with Mr. Edgar M. Queeny as president, will handle cresylic acid, cresol U.S.P., pure creosols and special tar, and acid fractions.

A NATIONAL FUEL COUNCIL has been established in Spain by Royal decree. It will establish commerical classification of fuel, prepare schemes of technical education and propose Government measures for developing the local mineral oil industry and for utilising alcohol and other vegetable liquid fuels for motors, etc. The Fuel Commission appointed January, 1925, will cease to operate when it has reported to the Council created by this Decree.

MR. ROSCOE BRUNNER, chairman of Brunner, Mond and Co., Ltd., received a silver watch on Friday, March 5, at Winnington, Northwich, when the company presented service awards. Mr. Roscoe Brunner was one of 133 who received watches for 25 years' service, and 41 employees received gold medals for 40 years' service and 79 received gold watches for 35 years' service. So far, nearly 700 employees have received gold watches, the service figures exceeding all records known in any country.

A SPECIAL ARTIFICIAL SILK NUMBER was published by *The Times* on Tuesday. The contents included articles on the viscose, acetate, nitro-cellulose, and cupra-ammonium processes, "Cellulose," by Mr. C. F. Cross, F.R.S., "The New Textile," by Mr. S. Courtauld; "The Chemistry of Cellulose," by Mr. C. F. Cross, "The Products of To-day," by Professor J. Huebner, F.I.C., and on artificial silk dyeing, by Mr. C. M. Whittaker and J. B. Fothergill. The number is well illustrated and includes pictures of plant in this country and abroad, and the position and prospects of all producing countries are surveyed.

THE FOLLOWING AWARDS have been made by the Council of the Institution of Mining and Metallurgy. The gold medal of the Institution to Sir Robert Kotzé for distinguished services to the mining industry, for work on the dust problem in the mines of the Rand, and in promoting the development of natural resources of the Union of South Africa. "The Consolidated Gold Fields of South Africa, Ltd.," gold medal to Professor L. H. Cooke, in recognition of his services in the advancement of the science and practice of mine-surveying. "The Consolidated Gold Fields of South Africa, Ltd.," premium of 40 guineas to Dr. H. C. Boydell for his paper on "The Rôle of Colloidal Solutions in the Formation of Mineral Deposits."

Obituary

MR. EDWARD E. ARNOLD (see p. 248).

MR. CEDRIC HARDING BEEBE, chief of the technical library at Edgewood Arsenal, U.S.A., was drowned while skating. Mr. Beebe, who was a Rhodes scholar at Oxford, had been associated with the Mallinckrodt Chemical Works, St. Louis, and Sharpe and Dohme, Baltimore. Aged 35.

MR. A. B. HULL, partner in Sandie and Hull, soap and chemical manufacturers, Liverpool, aged 64.

MR. D. M. VASS, director W. G. Walker and Sons, Ltd., Hawkshill Chemical Works, Ayr, on Wednesday, March 3.

References to Current Literature

British

ADSORPTION.—Studies in adsorption by an optical method. Fixation by dispersoids of methylene-blue within the disperse phase. A. Fodor and R. Riwlin. *Chem. Soc. Trans.*, January, 1926, pp. 102–112.

CATALYSIS.—Theories of catalysis. Part I. S. K. Tweedy. *J.S.C.I.*, March 5, 1926, pp. 157–159.

COAL.—Researches on the chemistry of coal. Part IV. The oxidation of the residue from the benzene-pressure-extraction process. W. A. Bone and R. Quarendon. *Roy. Soc. Proc.*, March, 1926, pp. 537–542.

DYEING.—Comparison of the affinity of cotton, wool, and particularly cellulose acetate silk for azo compounds (dyestuffs) containing sulphonic, carboxyl, arsinic, and stibinic acid groups. A. J. Hall and M. I. Aische. *J. Text. Inst.*, February, 1926, pp. 104–110 T.

ORGANO ANTIMONY COMPOUNDS.—Antimonial analogues of the cacodyl series. G. T. Morgan and G. R. Davies. *Roy. Soc. Proc.*, March, 1926, pp. 523–534.

Dimethylstibine cyanide, an analogue of cacodyl cyanide. G. T. Morgan and V. E. Yarsley. *Roy. Soc. Proc.*, March, 1926, pp. 534–537.

OXIDATION.—Oxidation of zinc vapour by carbon dioxide. B. M. O'Harra. *Chem. News.* February 26, 1926, pp. 138–141.

OXIDES.—Purification of phosphoric oxide. G. I. Finch and R. P. Fraser. *Chem. Soc. Trans.*, January, 1926, pp. 117–119.

POLYCYCLIC COMPOUNDS.—The chemistry of the polycyclic structures in relation to their homocyclic unsaturated isomerides. R. F. Hunter. *Chem. News*, Part II, February 19, 1926, pp. 117–122; Part III, February 26, 1926, pp. 133–138.

REACTIONS.—Reaction regions. Part I. W. P. Jorissen. *Chem. News*, March 5, 1926, pp. 149–152.

Reactions of the *meso*-hydroxyanthrones. M. A. Matthews. *Chem. Soc. Trans.*, January, 1926, pp. 236–245.

SPECTROSCOPY.—Tesla-luminescence spectra. Part VI. Some amino-derivatives. W. H. McVicker, J. K. Marsh and A. W. Stewart. *Chem. Soc. Trans.*, January, 1926, pp. 17–20.

VALENCY.—Studies of valency. Part VII. Surface polarity and the reaction of ethylene and chlorine—the effect of the adsorbed water layer. R. G. W. Norrish and G. G. Jones. *Chem. Soc. Trans.*, January, 1926, pp. 55–62.

United States

COAL.—Effect of sulphur in the briquetting of sub-bituminous coal. H. K. Benson, J. N. Borglin and R. K. Rourke. *J. Ind. Eng. Chem.*, February, 1926, pp. 116–117.

COLLOIDS.—Equilibrium in colloid systems. O. K. Rice. *J. Phys. Chem.*, February, 1926, pp. 189–204.

Anomalous flocculation in colloidal clays and soils. F. Hardy. *J. Phys. Chem.*, February, 1926, pp. 254–265.

CYANIDES.—Calcium cyanide—"powdered hydrocyanic acid." F. J. Metzger. *J. Ind. Eng. Chem.*, February, 1926, pp. 161–163.

EVAPORATION.—Economic side of evaporator scale formation. W. L. McCabe. *Chem. Met. Eng.*, February, 1926, pp. 86–87.

FILTRATION.—Ultra-filtration of vegetable tanning solutions. A. W. Thomas and M. W. Kelly. *J. Ind. Eng. Chem.*, February, 1926, pp. 136–138.

GAS PURIFICATION.—Ultra-purification of gas mixtures. J. A. Almquist and R. L. Dodge. *Chem. Met. Eng.*, February, 1926, pp. 89–92.

HALOGEN COMPOUNDS.—The constitution of tribromophenol bromide and its congeners. W. M. Lauer. *J. Amer. Chem. Soc.*, February, 1926, pp. 442–451.

KILNS.—Measurement of kiln performance. W. K. Lewis and A. H. Radasch. *Chem. Met. Eng.*, February, 1926, pp. 76–78.

LIME.—The hydration of lime. W. G. Whitman and G. H. B. Davis. *J. Ind. Eng. Chem.*, February, 1926, pp. 118–120.

REACTIONS.—Nickel carbonyl, carbon monoxide and Grignard reagents. W. L. Gilliland and A. A. Blanchard. *J. Amer. Chem. Soc.*, February, 1926, pp. 410–420.

URANIUM.—Metallic uranium. J. F. Goggin, J. J. Cronin, H. C. Fogg and C. James. *J. Ind. Eng. Chem.*, February, 1926, pp. 114–116.

VAPOUR PRESSURES.—The vapour pressures of solid and liquid hydrogen cyanide. J. H. Perry and F. Porter. *J. Amer. Chem. Soc.*, February, 1926, pp. 299–302.

Adjusted vapour pressures of zinc and cadmium. C. G. Maier. *J. Amer. Chem. Soc.*, February, 1926, pp. 356–364.

The vapour pressure of arsenic trioxide. E. R. Rushton and F. Daniels. *J. Amer. Chem. Soc.*, February, 1926, pp. 384–389.

German

AMMONIA OXIDATION.—Catalytic oxidation of ammonia. L. Andrussow. *Z. angew. Chem.*, March 4, 1926, pp. pp. 321–332.

ANALYSIS.—Estimation of carbon monoxide in hydrogen. P. Schuftan. *Z. angew. Chem.*, February 25, 1926, pp. 276–278.

Determination of small quantities of alcohol and ether vapour when present together. E. v. Somogyl. *Z. angew. Chem.*, February 25, 1926, pp. 280–281.

The estimation of nicotine by the Ulex method. F. Mach. and F. Sindlinger. *Z. anal. Chem.*, No. 10, 1926, pp. 369–386.

The iodometric determination of arsenic acid. B. Ormont. *Z. anal. Chem.*, Nos. 11–12, 1926, pp. 417–426.

CELLULOSE.—Advances in the knowledge of fibrin. R. O. Herzog. *Z. angew. Chem.*, March 4, 1926, pp. 297–302.

Estimation of the degree of swelling of cellulose with the aid of Schwalbe's hydrolysis number method. G. Bernardy. *Z. angew. Chem.*, February 25, 1926, pp. 259–261.

CEMENTS.—The preparation of hydraulic cements from copper slag. G. Agde and P. Assmann. *Z. angew. Chem.*, February 25, 1926, pp. 271–276.

COMPLEX COMPOUNDS.—Investigations of complex thallium compounds. A. Benrath. *Z. anorg. u. allg. Chem.*, February 15, 1926, pp. 21–30.

The complex chemical behaviour of beryllium. R. Fricke. *Z. angew. Chem.*, March 4, 1926, pp. 317–321.

Complex copper salts. Part I. Complex copper thiosulphate. A. Benrath. *Z. anorg. u. allg. Chem.*, February 15, 1926, pp. 31–40.

CRYSTALLOGRAPHY.—New investigations of the growth and solution of crystals. K. Spangenberg. *Z. angew. Chem.*, March 4, 1926, pp. 304–306.

DYEING.—The theory of the dyeing of wool and silk. P. Pfeiffer and O. Angern. *Z. angew. Chem.*, February 25, 1926, pp. 253–259.

HYDROCARBONS.—The winning of benzol from coal gas. A. Schmalenbach. *Glückauf*, January 9, 1926, pp. 45–50.

NITRATION.—Nitration of aromatic compounds with bismuth nitrate. L. Spiegel and H. Haymann. *Ber.*, February 10, 1926, pp. 202–204.

OILS.—Pine oil and its autoxidation products. P. Epple and S. Ruhemann. *Ber.*, February 10, 1926, pp. 294–301.

Insulating oils. H. Stäger. *Z. angew. Chem.*, March 4, 1926, pp. 308–316.

Talloel, a waste product of the sulphate cellulose manufacture. M. Dittmer. *Z. angew. Chem.*, February 25, 1926, pp. 262–269.

ORGANO METALLIC COMPOUNDS.—The mercurisation of aromatic sulphides. G. Sachs and M. Ott. *Ber.*, February 10, 1926, pp. 171–175.

Organo arsenic compounds. Part II. Mercurised arylarsinic acids. E. Maschmann. *Ber.*, February 10, 1926, pp. 213–218.

OXIDATION.—The oxidation of hydrazine. Part I. E. Konrad and L. Pellens. *Ber.*, February 10, 1926, pp. 135–138.

Oxidation of combined nitrogen to nitrate at low temperatures and reduction of nitrate to cyanide. K. A. Hofmann and others. *Ber.*, February 10, 1926, pp. 204–212.

SILICIDES.—The silicides of calcium and magnesium. L. Wöhler and O. Schliephake. *Z. anorg. u. allg. Chem.*, February 15, 1926, pp. 1–20.

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each

Abstracts of Complete Specifications

246,683. Condensation Products of the Anthraquinone Series, Manufacture of. Farbwerke vorm. Meister, Lucius, & Brüning, Hoechst-on-Main, Germany. Application date, February 23, 1925. Addition to 205,502.

Specifications Nos. 205,502, 220,304, and 222,125 (see The Chemical Age, Vol. IX, p. 693, Vol. XI, pp. 380 and 531) describe the condensation of benzanthrone or a substitution product with an aromatic acid chloride, and also the heating of Bzi-aroyl-benzanthrone to a high temperature with aluminium chloride to obtain condensation products of the anthraquinone series. It has now been found that these products can be obtained by treating a 1:5-diaroyl-naphthalene with aluminium chloride. A higher yield can be obtained by introducing air or oxygen into the mixture during the melting process. The oxygen appears to oxidise the reduction product, primarily formed by the hydrogen split off, of the benzanthrone or its substitution product, and to prevent the benzoylation of the reduction product. A better yield of the dyestuff is obtained in this manner. The crude dyestuff is purified by extraction with boiling water and dilute hydrochloric acid, and can be oxidised immediately with hypochlorite and then extracted with spirit. The soluble portion may be heated with aluminium chloride to convert it into the same dyestuff. If the crude fused mixture is again heated with a further quantity of aluminium chloride, the formation of the intermediate product soluble in spirit is avoided. In an example, 1:5-dibenzoyl-naphthalene is triturated with aluminium chloride; and the mixture heated to 170°-175° C. for two hours. Water is added, and the residue extracted with boiling dilute hydrochloric acid to obtain the dyestuff. Other examples are given.

246,889. Nitric Acid from Nitrous Gases Obtained by the Catalytic Combustion of Mixtures of Ammonia and Oxygen, Process for. I. W. Cederberg, 10 and 11, Friedrichstrasse, Berlin-Steglitz, Germany. Application date, October 1, 1924.

When ammonia is oxidised with air and the nitrous gases absorbed in water, the absorption process requires very large towers and the nitric acid obtained has a strength of only about 52 per cent. If ammonia is oxidised with oxygen instead of air and the water formed in the reaction is alone used to condense the nitrous gases, an acid of about 77 per cent. strength can be obtained. In this invention, in which an ammonia-oxygen is used, the oxygen content of the reaction gases, which are only slightly above atmospheric pressure, is only slightly above that necessary for the conversion into nitric acid. The gases flow through an absorption and condensation apparatus, and the condensate is simultaneously carried forward in the same direction as the gases. No external supply of water is used. The absorption apparatus may consist of a series of U-tubes formed of iron-silicon alloy.

246,937. Purification of Liquids. F. G. P. Remfry and A. E. Dunstan, Meadhurst, Cadbury Road, Sunbury-on-Thames. Application date, November 13, 1924.

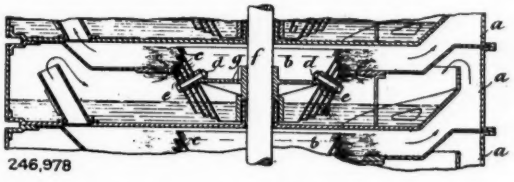
This process is for purifying mineral oils, mineral oil distillates, and distillates of coal tar and shale oil. This is effected by agitating the oil with freshly precipitated mercuric sulphide. The sulphide may be precipitated on a porous carrier, or mixed with a porous material, and the sulphide may be combined with another contact substance. The mercuric sulphide appears to have no chemical effect on the oil, but it has been found that the colour of kerosene can be reduced from 11° Saybolt to a colourless condition, and a dark brown petroleum distillate can be converted to a light yellow colour.

246,954. Carbon for Decolourising, Deodorising and Other Processes, Manufacture of. The Artificial Coal Co. (Hamon Process), Ltd., 6, Hill Street, Jersey, and Count L. le W. Hamon, 21, Park Square, Portland Place, London. Application date, December 2, 1924.

Carbon for decolourising sugar, oils, wax, etc., has been made from substances such as peat or sawdust with a spacing material such as lime or magnesia. The mixture is carbonised, and the spacing material then removed by treating with acid and water, which involves the use of a large quantity of acid. In this invention the carbon-bearing substance employed is paper pulp waste, with or without peat or other carbonaceous material, and it is found that less alkaline earth is necessary, and therefore less acid for its removal. When peat is employed it is air-dried until it contains 25–30 per cent. of water, and the mixture is heated in a retort for 6–30 hours.

246,978. Gas Washers. Kirkham, Hulett and Chandler, Ltd., and S. Hersey, 37 and 38, Norfolk House, Norfolk Street, Strand, London, W.C.2. Application date, January 3, 1925.

This gas washer is suitable for the extraction of ammonia and other impurities from coal and other gases. The gas flows upwards through a series of superposed chambers *a*,



246,978

each having a spraying device *b* which sprays the extracting liquid into contact with the gas. The sprayer comprises a number of concentric inverted cones *c* of unequal length, so that the upper edge of each cone projects above the edge of the surrounding cone, while the lower ends of the cone dip into the liquid to be sprayed. The cones are carried by a rotating shaft *f* by means of a spider *g* to which the cones are secured by bolts *d*. The upper part of the rim is perforated so that a combined spray of considerable depth is obtained through which the gas passes upwards. The cones may be provided with internal spiral vanes to increase the lifting capacity.

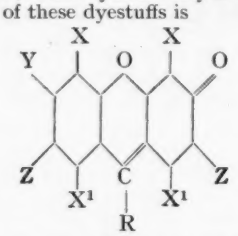
246,984. Products for Dyeing Acetyl Cellulose or Fabrics containing It. British Dyestuffs Corporation, Ltd., 70, Spring Gardens, Manchester, J. Baddiley, A. Shepherdson, H. Swann, J. Hill and L. G. Lawrie, Crumpsall Vale Chemical Works, Blackley, Manchester. Application date, January 7, 1925. Addition to 224,077.

Specification No. 224,077 (see The Chemical Age, Vol. XI, p. 582) describes the dyeing of acetyl silk with the aid of protective colloids or dispersing agents obtained by condensing naphthalene with formaldehyde in sulphuric acid solution, or naphthalene sulpho acid with formaldehyde. These substances are mixed with insoluble or nearly insoluble colours having affinity for acetyl silk. It has now been found that much smaller quantities of the dispersing agent may be employed than those specified in the earlier patent, *i.e.*, less than 1 per cent. of the dispersing agent in a paste containing 10 per cent. of dyestuff. An example of such a paste is aminoanthraquinone 10 parts, dispersing agent 0·25 part, water 89·75 parts. In the earlier patent, the acid condensation mixture was partly neutralised with caustic soda, but it has now been found that it is more advantageous to neutralise the condensation mixture completely with ammonia.

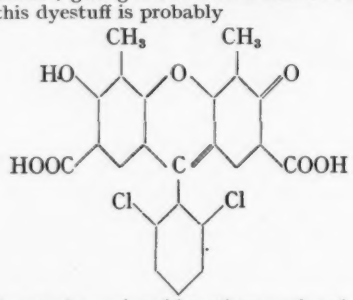
247,003. New Dyestuffs of the Pyrone Series, Manufacture of. W. Carpmael, London. From Farbenfabriken vorm. F. Bayer and Co., Leverkusen, near Cologne, Germany. Application date, January 31, 1925.

These dyestuffs are obtained by condensing 2 : 4- or 2 : 6-dioxy-benzoic-acid or their derivatives or mixtures with aromatic aldehydes substituted or not in the ortho-position to the carbonyl group but not containing an hydroxy group in the ortho or para position to the carbonyl group, and oxidising the resulting leuco compounds, which latter may

first be sulphonated, or the dyestuff may be sulphonated. The probable formula of these dyestuffs is



in which X is H or any substituent such as CH_3, COOH; X^1 and Y represent H or any substituent such as OH; Z represents H or any substituent such as COOH; and R represents an aromatic nucleus. The dyes are red-yellow-greenish-black powders, slightly soluble in water, but easily soluble after sulphonation. Wool is dyed in acid baths yellow-orange to red shades. In an example, 2 : 6-dichlorbenzaldehyde and 2 : 4-dioxy-3-methyl-benzoic acid are dissolved in strong sulphuric acid, and stirred until both components are almost converted into the leuco acid, which may be separated by pouring on ice. The leuco acid need not be isolated, but the mixture may be treated with sodium nitrite and sulphuric acid at 30°–50° C with stirring, until the formation of the dyestuff is complete. The dye is slightly soluble in hot water, and easily soluble in caustic soda lye or sodium carbonate, giving a fluorescent scarlet solution. The formula of this dyestuff is probably



The aldehyde may be replaced by others such as benzaldehyde, ortho-sulphobenzaldehyde, ortho-chlorobenzaldehyde, 2-chloro-5-sulphobenzaldehyde, 2 : 6-dichloro-3-oxybenzaldehyde, 2 : 4 : 6-trichloro-3-oxybenzaldehyde, 2-chloro-4-diethylaminobenzaldehyde, 1 : 3-dichloro-2-anthraquinone-aldehyde, metachlorobenzaldehyde, parachlorobenzaldehyde, 4-chloro-3-sulphobenzaldehyde, paranitro-benzaldehyde, paradiethylaminobenzaldehyde, etc. Sulphuric acid groups may be introduced into the leuco compound by dissolving it in concentrated sulphuric acid and adding fuming sulphuric acid. The leuco acid is transformed into the dyestuff by diluting with sulphuric acid and treating with sodium nitrite. The sulphuric acid group may also be introduced into the dyestuff itself in a similar manner, and a detailed example of this is given.

247,050. PURIFICATION OF GASES. J. Y. Johnson, London. From Badische Anilin and Soda Fabrik, Ludwigshafen-on-Rhine, Germany. Application date, May 21, 1925.

The process is for purifying gases from iron carbonyl, which is an undesirable impurity in catalytic reactions. The gas is mixed with some substance which is capable of reacting with iron carbonyl and passed over a porous active mass which is subsequently regenerated. Suitable additions are oxygen, chlorine, hydrogen chloride and phosgene, and the active mass may be active carbon, silica gel, etc. The iron carbonyl is converted into iron oxide, which is retained. Alternatively, the gas to be purified and the reacting gas may be passed in succession over the absorbent. The absorbent is subsequently purified by treating with dilute acid, or in some cases with water. Some examples are given.

247,052. COLOURING MATTER PASTES, MANUFACTURE OF. J. Y. Johnson, London. From Badische Anilin and Soda Fabrik, Ludwigshafen-on-Rhine, Germany. Application date, May 29, 1925.

The object is to prevent the settling of dyestuffs pastes on storage, and this is effected by adding a small proportion of a soluble permanganate which is decomposed with the formation of insoluble manganese compounds. Thus, indanthrene orange RRT 10 per cent. paste 500 parts are mixed with a solution of potassium permanganate 0·25 part. The suspension remains unaltered for a considerable period.

NOTE.—Abstracts of the following specifications which are now accepted appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention :—235,129 (L'Air Liquide, Soc. Anon. pour l'Etude et l'Exploitation des Procédés G. Claude), relating to manufacture of hydrogen by a liquefaction process, see Vol. XIII, p. 159; 236,591 (British Thomson-Houston Co., Ltd.), relating to resinous condensation products, see Vol. XIII, p. 256; 236,891 (Naugatuck Chemical Co.), relating to polymerised products from styrol and its homologues, see Vol. XIII, p. 284; 240,126–7 (A. A. Backhaus), relating to revivification of activated charcoal, see Vol. XIII, p. 559; 241,579 (Farbenfabriken vorm. F. Bayer and Co.), relating to alkali salts of aromatic sulpho chloramides, see Vol. XIII, p. 663; 242,669 (Farbenfabriken vorm. F. Bayer and Co.), relating to manufacture of organic mercury compounds, see Vol. XIV, p. 82.

International Specifications not yet Accepted

245,155. BARIUM SULPHATE. K. Ebers, 74, Manhagener Allee, Ahrensburg, Holstein, Germany. International Convention date, December 24, 1924.

Ground heavy spar is roasted, and decolorised by treating with nascent chlorine, *e.g.*, by adding manganese dioxide and concentrated hydrochloric acid with steam heating.

245,165. DYES. I. G. Farbenindustrie Akt.-Ges., Hoechst-on-Main, Germany. Assignees of Farbwerke vorm. Meister, Lucius, and Brüning, Hoechst-on-Main, Germany. International Convention date, December 27, 1924. Addition to 205,502.

Dibenzanthronyl or a dibenzanthrone, not substituted in the Bz2- or $Bz2^1$-positions, are treated with an aliphatic or aromatic acid chloride or with phthalic anhydride in the presence of a condensing agent to obtain dyes. Suitable reagents mentioned are benzoyl chloride, oxalyl chloride, and also phosgene, acetyl chloride, and phthalic anhydride. The condensation may be effected in an atmosphere of oxygen, in presence of aluminium chloride.

245,473. ALUMINIUM ETHYLATE. Chemische Fabrik auf Actien (vorm. E. Schering), 170, Mullerstrasse, Berlin. International Convention date, January 3, 1925.

Aluminium is suspended in molten aluminium ethylate or in an indifferent solvent such as toluene or xylene. Ethyl alcohol with a catalyst such as iodine, mercuric chloride, or stannic chloride is gradually added at such a rate that it can be taken up. The reaction is exothermic, and aluminium ethylate is produced.

245,719. METAL COMPOUNDS, ACIDS AND AMMONIA. A. F. Meyerhofer, 10, Göthestrasse, Zurich, Switzerland. International Convention date, January 10, 1925.

These compounds are obtained by the reaction of a metal, oxide, carbonate or salt with a complex hydrofluoric acid, which yields a complex fluoride, and the latter is treated with a salt to obtain second complex fluoride from which the complex acid is regenerated, and the required metal compound. Little or no solvent may be employed. Zinc oxide is treated with hydrofluosilicic acid yielding zinc silicofluoride, which is treated with sodium chloride to obtain sodium silicofluoride. This may be treated with sulphuric acid to obtain hydrofluosilicic acid, or heated to obtain sodium fluoride and silicon fluoride. Sodium fluoride can be treated with calcium oxide to obtain sodium hydrate, or calcium carbonate in the presence of carbon dioxide can be employed to obtain sodium carbonate.

Sodium chloride or nitrate may be treated with hydrofluosilicic acid to obtain hydrochloric or nitric acid and sodium silicofluoride, which may be used as above. Sodium fluoride may be treated with calcium phosphate to obtain trisodium phosphate, or with calcium cyanamide to obtain ammonia and sodium carbonate. Sodium fluoride may be treated with calcium sulphide, sulphite or nitrate to obtain the corresponding sodium compounds.

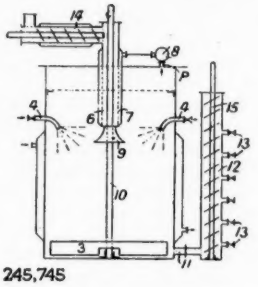
Zinc silicofluoride obtained as above is treated with potassium chloride to obtain potassium silicofluoride which is heated to obtain potassium fluoride which may then react with calcium nitrate to obtain potassium nitrate.

Particulars are also given for obtaining zinc borofluoride, barium silicofluoride, barium fluoride, barium nitrate, barium

hydrate, barium oxide and peroxide. Lead oxide may be treated with hydrofluosilicic acid to obtain the silicofluoride which may then be treated with arsenic acid to obtain lead arsenate.

245,745. PURIFYING OILS. H. Bollmann, 1, Alsterdamm, Hamburg. International Convention date, January 6, 1925.

Mineral or fatty oils are bleached by bringing small quantities at a time into contact with fuller's earth. The oil is



245,745

sprayed at 4 into a chamber 1, and fuller's earth is passed through a heated tube 14 to a tube 6 and distributing cone 9. The cone 9 and an agitator 3 are mounted on a rotating shaft 10. A pump 8 forces air through a jacket 7 into the perforated lower part of the tube 6 to distribute the earth. The mixture passes through a pipe 11 to a vessel 12 having an agitator 15, and oil is withdrawn at 13.

245,758–9. DYES AND DYEING. Chemische Fabrik vorm. Sandoz, Basle, Switzerland. International Convention date, January 6, 1925.

245,758. Azo dyes are obtained by coupling diazotised aminoaryl-glycolethers or aminoaryl-glycerolethers with the usual components. These dyes contain in the aryl nuclei one or more glycolether or glycerolether groups but no sulphonic or carboxylic groups, and are particularly suitable for dyeing cellulose esters.

245,759. All dyestuffs except basic may have their affinity towards animal fibres increased by treating the fibres with esterifying agents, particularly aliphatic, aromatic, or hydroaromatic sulphonic halides or carboxylic halides or anhydrides, *e.g.*, *p*-toluene sulphochloride.

245,762. NITRIDES AND AMMONIA. Soc. d'Etudes Minières et Industrielles, 1 bis, Rue de Havre, Paris. International Convention date, January 8, 1925.

Metals of the iron group such as iron, cobalt, nickel, tungsten, molybdenum, are heated in a nitrogen-containing gas at ordinary or low pressure with lithium nitride or amide, to obtain the corresponding nitrides; a temperature of 500°–600° C. is suitable.

The synthesis of ammonia can be effected at atmospheric pressure by passing the mixed gases over a metal of the iron group, a lithium-nitrogen compound, and an oxide of a metal of the aluminium group.

245,768. FERTILISERS. Siemens and Halske Akt.-Ges., Siemensstadt, Berlin. International Convention date, January 9, 1925.

This fertiliser is obtained by the reaction of carbon monoxide, chlorine, and ammonia. The carbon monoxide and chlorine are first combined into phosgene, and a liquid saturated with ammonia is then injected. If 4 volumes of ammonia are employed to 1 volume of phosgene, the product comprises urea 1 molecular part and ammonium chloride 2 molecular parts. The products separate out on cooling, and the liquid is used to absorb more ammonia. The gases used may be by-products from other processes. If a smaller proportion of ammonia is used, cyanamide and cyanuric acid are formed in addition.

LATEST NOTIFICATIONS.

248,332. Manufacture of phosphoric acid. Kyber, W. February 25, 1925.

248,339. Process for the manufacture of alkaline earth salts of the carboxylic acids of aromatic sulpho-halo-alkali amides. Esseff Chemische Industrie U. Handels Akt.-Ges. February 25, 1925.

248,349. Processes for the treatment of copper-containing sulphide ores and the like. Verein für Chemische und Metallurgische Produktion. February 26, 1925.

248,359. Dyeing-apparatus. Böhm, Brüder. February 25, 1925.

248,375. Preparation of olefine derivatives. Petroleum Chemical Corporation. February 24, 1925.

248,404. Manufacture of synthetic camphor. Dupont, G. H., and Brus, G. March 2, 1925.

Specifications Accepted with Date of Application

230,821. Mineral oil distillation, Processes of. Sun Oil Co. March 17, 1924.

241,866. Hydrocarbon oils, Method of cracking. Sinclair Refining Co. October 24, 1924. Addition to 232,178.

243,665. Coal, Distillation of. L'Air Liquide, Soc. Anon. pour l'Etude et l'Exploitation des Procédés G. Claude. November 28, 1924.

247,296. Titanium pigments. C. Weizmann and J. Blumenfeld. July 12, 1922.

247,634. Alloys, Manufacture of. R. W. Stimson and W. Borchers. November 6, 1924.

247,635 and 247,876. Alloys, Manufacture of. R. W. Stimson. November 6, 1924.

247,639. Distillation of carbonaceous material, Method of and apparatus for. O. H. Hertel. November 13, 1924.

247,644. Lead chambers employed in the manufacture of sulphuric acid. W. G. Mills, and Packards and J. Fison (Thetford), Ltd. November 17, 1924.

247,658. Oil bearing materials, Apparatus for the distillation of. L. de Hernandez. November 19, 1924.

247,687. Alloys containing lead and tungsten, Process for obtaining. H. Falkenberg. December 8, 1924.

247,714. Sulphonated products of wool fat, Process of obtaining. O. Herzog. January 10, 1925.

Applications for Patents

Alliott, E. A., and Manlove, Alliott and Co., Ltd., Centrifugal extractors. 5,702. March 1.

Bollmann, H. De-acidification of oils and fats. 5,997. March 3. (Germany, June 6, 1925.)

British Alizarine Co., Ltd., and Dawson, W. H. Manufacture of dyestuffs. 6,056. March 4.

British Dyestuffs Corporation, Ltd., Emerson, F. W., Rogers, W. D., and Stubbings, W. V. Manufacture of halogenated indanthrenes. 5,758. March 1.

British Dyestuffs Corporation, Ltd., and Cronshaw, C. J. T. Vulcanisation of rubber. 5,759. March 1.

British Dyestuffs Corporation, Ltd., Davidson, A., and Shepherdson, A. Dyes for acetate silk. 5,760. March 1.

British Dyestuffs Corporation, Ltd., and Evans, H. Manufacture of anthraquinone derivatives. 5,761. March 1.

Brus, G. Manufacture of synthetic camphor. 5,879. March 2. (France, March 2, 1925.)

Carpmael, W., and I. G. Farbenindustrie Akt.-Ges. Manufacture of complex antimony compounds. 5,767. March 1.

Cooke, E. A. Purification of natural soda. 5,635. March 1.

Du Pont de Nemours and Co., Inc., E. I., and Marks, E. C. R. Production of N-dihydro 1. 2. 1^1. 2^1. anthraquinone azine and its derivatives. 5,891. March 2.

Du Pont de Nemours and Co., Inc., E. I., and Marks, E. C. R. Water-insoluble dyes. 5,892. March 2.

Dupont, G. H. Manufacture of synthetic camphor. 5,879. March 2. (France, March 2, 1925.)

Fanshawe, F. W. Dyeing. 6,192. March 5.

Gray, P. H. H., and Lawes Agricultural Trust. Manufacture of indigotin. 5,747. March 1.

Henshaw, D. M., W. C. Holmes and Co., Ltd., and Parker, J. Separation of tar and ammonia from gases. 6,231. March 5.

I. G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of ammonium phosphates. 6,010. March 3.

I. G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of organic compounds containing oxygen. 6,103. March 4.

I. G. Farbenindustrie Akt.-Ges. Manufacture of anthraquinone compounds. 6,020. March 3. (Germany, March 3, 1925.)

I. G. Farbenindustrie Akt.-Ges. Manufacture of azo dyestuffs. 6,244. March 5. (Germany, March 5, 1925.)

Laing, B. Distillation of carbonaceous materials. 6,337. March 6.

Scottish Dyes, Ltd., Smith, W., and Thomas, J. Production of anthraquinone dyestuffs. 6,230. March 5.

Silica Gel Corporation. Refrigeration. 6,137. March 4. (United States, March 11, 1925.)

Soc. of Chemical Industry in Basle. Manufacture of condensation products from urea, etc., and formaldehyde. 5,746. March 1. (Switzerland, March 10, 1925.)

Soc. of Chemical Industry in Basle. Manufacture of quinolic anhydride. 5,918. March 2. (Switzerland, March 19, 1925.)

Zeche M. Stinnes. Process for obtaining phenols from ammoniacal liquor, etc. 6,234. March 5. (Germany, March 13, 1925.)

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

Acid Acetic, 40% Tech.—£19 per ton.

Acid Boric, Commercial.—Crystal, £37 per ton, Powder, £39 per ton.

Acid Hydrochloric.—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.

Acid Nitric, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.

Acid Sulphuric.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

Ammonia Alkali.—£6 15s. per ton f.o.r. Special terms for contracts.

Bisulphite of Lime.—£7 10s. per ton, packages extra, returnable.

Bleaching Powder.—Spot, £9 10s. d/d; Contract, £8 10s. d/d, 4-ton lots.

Borax, Commercial.—Crystal, £23 per ton. Powder, £24 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)

Calcium Chlorate (Solid).—£5 12s. 6d. to £5 17s. 6d. per ton d/d, carr. paid.

Copper Sulphate.—£25 to £25 10s. per ton.

Methylated Spirit 64 O.P.—Industrial, 2s. 5d. to 2s. 11d. per gall. Mineralised, 3s. 8d. to 4s. per gall., in each case according to quantity.

Nickel Sulphate.—£38 per ton d/d.

Nickel Ammonia Sulphate.—£38 per ton d/d.

Potash Caustic.—£30 to £33 per ton.

Potassium Bichromate.—4½d. per lb.

Potassium Chlorate.—3¾d. per lb., ex wharf, London, in cwt. kegs.

Salammoniac.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.

Salt Cake.—£3 15s. to £4 per ton d/d. In bulk.

Soda Caustic, Solid.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

Soda Crystals.—£5 to £5 5s. per ton ex railway depots or ports.

Sodium Acetate 97/98%.—£21 per ton.

Sodium Bicarbonate.—£10 10s. per ton, carr. paid.

Sodium Bichromate.—3½d. per lb.

Sodium Bisulphite Powder 60/62%.—£17 per ton for home market, 1-cwt. iron drums included.

Sodium Chlorate.—3d. per lb.

Sodium Nitrite, 100% Basis.—£27 per ton d/d.

Sodium Phosphate.—£14 per ton, f.o.r. London, casks free.

Sodium Sulphate (Glauber Salts).—£3 12s. 6d. per ton.

Sodium Sulphide Conc. Solid, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

Sodium Sulphide Crystals.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

Sodium Sulphite, Pea Crystals.—£14 per ton f.o.r. London, 1-cwt. kegs included.

Coal Tar Products

Acid Carbolic Crystals.—4⅜d. to 5¼d. per lb. Crude 60's, 1s. 4d. to 1s. 6d.

Acid Cresylic 97/99.—1s. 8d. to 1s. 9d. per gall. Pale, 95%, 1s. 6d. to 1s. 7d. per gall. Dark, 1s. 3d. to 1s. 4d. per gall. Steady.

Anthracene.—A quality, 3d. to 4d. per unit.

Anthracene Oil, Strained.—7d. to 8d. per gall. Unstrained, 6¼d. to 7¼d. per gall.

Benzol.—Crude 65's, 1s. 2¼d. to 1s. 3¼d. per gall., ex works in tank wagons. Standard Motor, 1s. 9d. to 1s. 11d. per gall., ex works in tank wagons. Pure, 1s. 10d. to 2s. 4d. per gall., ex works in tank wagons.

Toluol.—90%, 1s. 9½d. to 2s. per gall. Pure, 2s. to 2s. 2d. per gall.

Xylol.—2s. to 2s. 6d. per gall. Pure, 3s. 3d. per gall.

Creosote.—Cresylic, 20/24%, 9d. to 10d. per gall. Standard specification, middle oil, heavy, 6½d. to 7d. per gall.

Naphtha.—Crude, 9d. to 1s. per gall. Solvent 90/160, 1s. 5d. to 1s. 8d. per gall. Steady demand. Solvent 90/190, 1s. to 1s. 4d. per gall.

Naphthalene Crude.—Drained Creosote Salts, £3 10s. to £5 10s. per ton. Whizzed or hot pressed, £5 10s. to £7 10s.

Naphthalene.—Crystals and Flaked, £11 10s. to £13 per ton, according to districts.

Pitch.—Medium soft, 81s. to 85s. per ton, according to district. Lower prices on West Coast. Market active.

Pyridine.—90/140, 19s. 6d. to 21s. per gall. Firmer. Heavy, 7s. to 10s. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated.

Acid Amidonaphthol Disulpho (1-8-2-4).—10s. 9d. per lb.

Acid Anthranilic.—7s. per lb. 100%.

Acid Benzoic.—1s. 9d. per lb.

Acid Gamma.—8s. per lb.

Acid H.—3s. 3d. per lb. 100% basis d/d.

Acid Naphthionic.—2s. 2d. per lb. 100% basis d/d.

Acid Neville and Winther.—4s. 9d. per lb. 100% basis d/d.

Acid Sulphanilic.—9d. per lb. 100% basis d/d.

Aniline Oil.—7d. per lb. naked at works.

Aniline Salts.—7d. to 7½d. per lb. naked at works.

Benzaldehyde.—2s. 1d. per lb. Good home inquiry.

Benzidine Base.—3s. 3d. per lb. 100% basis d/d.

***o*-Cresol 29/31° C.**—3d. per lb. Demand quiet.

***m*-Cresol 98/100%.**—2s. 1d. to 2s. 3d. per lb. Demand moderate.

***p*-Cresol 32/34° C.**—2s. 1d. to 2s. 3d. per lb. Demand moderate.

Dichloraniline.—2s. 3d. per lb.

Dimethylaniline.—1s. 11d. to 2s. per lb. d/d. Drums extra.

Dinitrobenzene.—9d. per lb. naked at works.

Dinitrochlorbenzene.—£84 per ton d/d.

Dinitrotoluene.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.

Diphenylaniline.—2s. 10d. per lb. d/d.

***a*-Naphthol.**—2s. per lb. d/d. Fair home inquiry.

***B*-Naphthol.**—11d. to 1s. per lb. d/d. Fair home inquiry.

***a*-Naphthylamine.**—1s. 3d. per lb. d/d. Fair home inquiry.

***B*-Naphthylamine.**—3s. 9d. per lb. d/d. Fair home inquiry.

***o*-Nitraniline.**—5s. 9d. per lb.

***m*-Nitraniline.**—3s. 6d. per lb. d/d.

***p*-Nitraniline.**—1s. 9d. per lb. d/d. Fair home inquiry.

Nitrobenzene.—5d. to 5½d. per lb. naked at works. Fair home inquiry.

Nitronaphthalene.—10d. per lb. d/d.

R. Salt.—2s. 4d. per lb. 100% basis d/d.

Sodium Naphthionate.—1s. 9d. per lb. 100% basis d/d.

***o*-Toluidine.**—8d. per lb. naked at works.

***p*-Toluidine.**—2s. 2d. per lb. naked at works.

***m*-Xylidine Acetate.**—2s. 11d. per lb. 100%.

Wood Distillation Products

Acetate of Lime.—Brown, £8 15s. to £9. Firmer. Grey, £17 10s. per ton. Better inquiry. Liquor, 9d. per gall. 32° Tw.

Acetone.—£81 per ton.

Charcoal.—£7 5s. to £9 per ton, according to grade and locality. Demand good.

Iron Liquor.—1s. 6d. per gall. 32° Tw. 1s. 2d. per gall., 24° Tw.

Red Liquor.—9½d. to 1s. per gall.

Wood Creosote.—2s. 9d. per gall. Unrefined.

Wood Naphtha, Miscible.—3s. 10d. per gall. 60% O.P. Solvent, 4s. 6d. per gall. 40% O.P. Very quiet.

Wood Tar.—£3 to £5 per ton, according to grade.

Brown Sugar of Lead.—£40 per ton.

Rubber Chemicals

Antimony Sulphide.—Golden, 6d. to 1s. 5d. per lb., according to quality, Crimson, 1s. 3d. to 1s. 7½d. per lb., according to quality.

Arsenic Sulphide, Yellow.—2s. per lb.

Barytes.—£3 10s. to £6 15s. per ton, according to quality.

Cadmium Sulphide.—2s. 9d. per lb.

Carbon Bisulphide.—£20 to £25 per ton, according to quantity.

Carbon Black.—5½d. per lb., ex wharf.

Carbon Tetrachloride.—£50 to £55 per ton, according to quantity, drums extra.

Chromium Oxide, Green.—1s. 2d. per lb.

Diphenylguanidine.—3s. 9d. per lb.

Indiarubber Substitutes, White and Dark.—5½d. to 6½d. per lb.

Lamp Black.—£35 per ton, barrels free.

Lead Hyposulphite.—9d. per lb.

Lithopone, 30%.—£22 10s. per ton.

Mineral Rubber "Rubpron."—£13 12s. 6d. per ton f.o.r. London.

Sulphur.—£9 to £11 per ton, according to quality.

Sulphur Chloride.—4d. per lb., carboys extra.

Sulphur Precip. B.P.—£47 10s. to £50 per ton.

Thiocarbamide.—2s. 6d. to 2s. 9d. per lb. carriage paid.

Thiocarbanilide.—2s. 1d. to 2s. 3d. per lb.

Vermilion, Pale or Deep.—5s. 3d. per lb.

Zinc Sulphide.—1s. 1d. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, 80% B.P.—£38 10s. to £39 per ton ex wharf London in glass containers.
ACID, ACETYL SALICYLIC.—2s. 4d. to 2s. 6d. per lb. Keen competition met. Good demand.
ACID, BENZOIC B.P.—2s. to 2s. 3d. per lb., according to quantity.
ACID, BORIC B.P.—Crystal, £43 per ton; Powder, £47 per ton. Carriage paid any station in Great Britain, in ton lots.
ACID, CAMPHORIC.—19s. to 21s. per lb.
ACID, CITRIC.—1s. 3d. to 1s. 4d. per lb., less 5%.
ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.
ACID, PYROGALLIC, CRYSTALS.—5s. 3d. per lb. Resublimed, 7s.
ACID, SALICYLIC.—1s. 3d. to 1s. 5d. per lb. Technical.—10½d. to 10¾d. per lb.
ACID, TANNIC B.P.—2s. 10d. per lb.
ACID, TARTARIC.—1s. 0½d. per lb., less 5%. Market firm.
AMIDOL.—6s. 6d. per lb., d/d.
ACETANILIDE.—1s. 7d. to 1s. 8d. per lb. for quantities.
AMIDOPYRIN.—12s. 6d. per lb.
AMMONIUM BENZOATE.—3s. 3d. to 3s. 6d. per lb., according to quantity.
AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks.
ATROPINE SULPHATE.—11s. per oz. for English make.
BARBITONE.—10s. per lb.
BENZONAPHTHOL.—3s. 3d. per lb. spot.
BISMUTH CARBONATE.—12s. 6d. to 14s. 3d. per lb.
BISMUTH CITRATE.—9s. 6d. to 11s. 3d. per lb.
BISMUTH SALICYLATE.—10s. 3d. to 12s. per lb.
BISMUTH SUBNITRATE.—10s. 9d. to 12s. 6d. per lb. according to quantity.
BORAX B.P.—Crystal, £27; Powder, £28 per ton. Carriage paid any station in Great Britain, in ton lots.
BROMIDES.—Potassium, 1s. 9d. to 1s. 11d. per lb.; sodium, 1s. 10d. to 2s. 2d. per lb.; ammonium, 2s. 3d. to 2s. 5d. per lb., all spot.
CALCIUM LACTATE.—1s. 4½d. to 1s. 6½d. Market firmer.
CHLORAL HYDRATE.—3s. 3d. to 3s. 6d. per lb., duty paid.
CHLOROFORM.—2s. 3d. to 2s. 7½d. per lb., according to quantity.
CREOSOTE CARBONATE.—6s. per lb.
FORMALDEHYDE.—£40 per ton, in barrels ex wharf.
GUAIACOL CARBONATE.—7s. per lb.
HEXAMINE.—2s. 4d. to 2s. 6d. per lb.
HOMATROPINE HYDROBROMIDE.—30s. per oz.
HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.
HYDROGEN PEROXIDE (12 VOLS.).—1s. 8d. per gallon f.o.r. makers' works, naked.
HYDROQUINONE.—4s. 8d. per lb., in cwt. lots.
HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.
IRON AMMONIUM CITRATE B.P.—2s. to 2s. 3d. per lb. Green, 2s. 4d. to 2s. 9d. per lb. U.S.P., 2s. 1d. to 2s. 4d. per lb.
MAGNESIUM CARBONATE.—Light Commercial, £31 per ton net.
MAGNESIUM OXIDE.—Light Commercial, £67 10s. per ton, less 2½%, price reduced; Heavy Commercial, £23 per ton, less 2½%; Heavy Pure, 2s. to 2s. 3d. per lb., according to quantity.
MENTHOL.—A.B.R. recrystallised B.P., 24s. net per lb., Synthetic, 15s. to 17s. 6d. per lb., according to quality. English make.
MERCURIALS.—Red oxide, 5s. 5d. to 5s. 7d. per lb.; Corrosive sublimate, 3s. 9d. to 3s. 11d. per lb.; white precipitate, 4s. 6d. to 4s. 8d. per lb.; Calomel, 4s. to 4s. 2d. per lb.
METHYL SALICYLATE.—1s. 7d. per lb.
METHYL SULPHONAL.—16s. 6d. per lb.
METOL.—9s. per lb. British make.
PARAFORMALDEHYDE.—1s. 11d. for 100% powder.
PARALDEHYDE.—1s. 3d. to 1s. 4d. per lb.
PHENACETIN.—4s. to 4s. 3d. per lb.
PHENAZONE.—6s. to 6s. 3d. per lb.
PHENOLPHTHALEIN.—4s. to 4s. 3d. per lb.
POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—80s. per cwt., less 2½% for ton lots. Market very firm.
POTASSIUM CITRATE.—2s. to 2s. 1d. per lb.
POTASSIUM FERRICYANIDE.—1s. 9d. per lb. in cwt. lots. Quiet.
POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity.
POTASSIUM METABISULPHITE.—7½d. per lb., 1-cwt. kegs included, f.o.r. London.
POTASSIUM PERMANGANATE.—B.P. crystals, 7½d. per lb., spot, slightly easier.
QUININE SULPHATE.—2s. 3d. to 2s. 4d. per oz., in 100 oz. tins. Steady market.
RESORCIN.—3s. 9d. per lb. In fair quantities.
SACCHARIN.—55s. per lb. Fair inquiry.
SALOL.—3s. per lb.
SODIUM BENZOATE, B.P.—1s. 10d. to 2s. 2d. per lb.
SODIUM CITRATE, B.P.C., 1911.—1s. 8d. to 1s. 11d. per lb., B.P.C., 1923. 1s. 11d. to 2s. 2d. per lb., according to quantity.
SODIUM FERROCYANIDE.—4d. per lb. carriage paid.
SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£14 to £15 per ton, according to quantity, d/d consignee's station in 1-cwt. kegs.
SODIUM NITROPRUSSIDE.—16s. per lb.
SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—75s. to 80s. per cwt., according to quantity.
SODIUM SALICYLATE.—Powder, 1s. 9d. to 2s. per lb. Crystal, 1s. 10d. to 2s. 1d. per lb. Very heavy demand.
SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 2d. per lb.
SODIUM SULPHITE, ANHYDROUS, £27 10s. to £28 10s. per ton, according to quantity; 1-cwt. kegs included.
SULPHONAL.—11s. 6d. per lb. Limited demand.
TARTAR EMETIC, B.P.—Crystal or Powder, 1s. 8d. to 1s. 9d. per lb.
THYMOL.—12s. to 13s. 9d. per lb. Strong demand.

Perfumery Chemicals

ACETOPHENONE.—9s. per lb.
AUBEPINE (EX ANETHOL).—9s. 6d. per lb.
AMYL ACETATE.—3s. per lb.
AMYL BUTYRATE.—6s. 6d. per lb.
AMYL SALICYLATE.—3s. 3d. per lb.
ANETHOL (M.P. 21/22° C.).—6s. per lb.
BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. 3d. per lb.
BENZYL ALCOHOL FREE FROM CHLORINE.—2s. 3d. per lb.
BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.
BENZYL BENZOATE.—2s. 9d. per lb.
CINNAMIC ALDEHYDE NATURAL.—17s. 6d. per lb.
COUMARIN.—11s. 9d. per lb.
CITRONELLOL.—15s. per lb.
CITRAL.—9s. per lb.
ETHYL CINNAMATE.—9s. per lb.
ETHYL PHTHALATE.—3s. per lb.
EUGENOL.—9s. 6d. per lb.
GERANIOL (PALMAROSA).—20s. per lb.
GERANIOL.—7s. to 16s. per lb.
HELIOTROPINE.—6s. per lb.
ISO EUGENOL.—14s. 3d. per lb.
LINALOL EX BOIS DE ROSE.—17s. 3d. per lb.
LINALYL ACETATE.—18s. per lb.
METHYL ANTHRANILATE.—9s. 3d. per lb.
METHYL BENZOATE.—5s. per lb.
MUSK KETONE.—35s. per lb.
MUSK XYLOL.—5s. 6d. per lb.
NEROLIN.—4s. per lb.
PHENYL ETHYL ACETATE.—12s. per lb.
PHENYL ETHYL ALCOHOL.—9s. 6d. per lb.
RHODINOL.—31s. per lb.
SAFROL.—1s. 8d. per lb.
TERPINEOL.—1s. 8d. per lb.
VANILLIN.—21s. 6d. to 23s. 3d. per lb. Good demand.

Essential Oils

ALMOND OIL.—12s. 6d. per lb.
ANISE OIL.—3s. 6d. per lb.
BERGAMOT OIL.—31s. per lb.
BOURBON GERANIUM OIL.—11s. 9d. per lb.
CAMPHOR OIL.—60s. per cwt.
CANANGA OIL, JAVA.—16s. per lb.
CINNAMON OIL, LEAF.—5d. per oz.
CASSIA OIL, 80/85%.—10s. per lb.
CITRONELLA OIL.—Java, 85/90%, 3s. 4d. Ceylon, 2s. 4d. per lb.
CLOVE OIL.—7s. 2d. per lb.
EUCALYPTUS OIL, 70/75%.—1s. 10d. per lb.
LAVENDER OIL.—French 38/40%, Esters, 22s. 6d. per lb.
LEMON OIL.—11s. per lb.
LEMONGRASS OIL.—4s. 9d. per lb.
ORANGE OIL, SWEET.—13s. per lb.
OTTO OF ROSE OIL.—Bulgarian, 65s. per oz. Anatolian, 35s. per oz.
PALMA ROSA OIL.—12s. 3d. per lb.
PEPPERMINT OIL.—Wayne County, 110s. per lb. Japanese, 13s. 6d. per lb.
PETITGRAIN OIL.—9s. per lb.
SANDAL WOOD OIL.—Mysore, 26s. per lb. Australian, 18s. 6d. per lb.

Poland as a Potash Producer

ACCORDING to the U.S. Assistant Commercial Attaché at Warsaw, although Polish potash production is relatively small in comparison with that of Germany and France, it is nevertheless growing in importance. A total of 142,611 metric tons of crude salts was extracted from the mines during the first nine months of 1925, consisting of 97,126 tons sylvanite and 45,485 tons kainit, equivalent to one-sixth of the output of the Alsatian mines for the corresponding period. The tonnage of crude salts lifted from the Polish deposits during the same period of 1923 was only 55,452 tons.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

London, March 12, 1926.

THE market has been quietly steady during the past week. There has been a fair up-take of chemicals generally, but business is not brisk. On the whole prices are very firmly maintained.

General Chemicals

ACETONE remains in short supply. Price is very firm at £81 to £83 per ton.

ACID ACETIC is rather more active at recent values.

ACID FORMIC is very firm and a fair business is passing. Price varies from £50 to £53 per ton, according to quantity.

ACID LACTIC is in fair demand at £43 10s. per ton for 50% by weight.

ACID OXALIC.—The market is slow and is still disturbed by second-hand parcels. With their absorption, however, an improvement is likely as the first hand position is remarkably firm.

ACID TARTARIC is higher at 11½d. per lb., but comparatively little interest is taken in the article.

ALUMINA SULPHATE is unchanged at £5 15s. per ton for 17-18%.

AMMONIUM CHLORIDE is quiet and uninteresting at £18 per ton.

ARSENIC.—A better tendency is perhaps still in evidence, although the demand is still very poor. Price is £14 per ton, which can be shaded for quantities.

BARIUM CHLORIDE is firm and scarce at £10 10s. to £11 per ton.

BLEACHING POWDER is unchanged.

CREAM OF TARTAR is a fair market at £76 per ton.

EPSOM SALTS are unchanged at £5 15s.

FORMALDEHYDE is very quiet at about £41 per ton.

LEAD ACETATE is rather lower in sympathy with the metal. Price is £43 10s. for white, and brown unchanged at £42 15s. per ton.

LIME ACETATE is unchanged.

LITHOPONE is unchanged at £19 10s. to £20 per ton.

METHYL ALCOHOL.—There is no demand. Price nominally £47 to £48 per ton.

METHYL ACETONE is scarce at £59 to £60 per ton.

POTASSIUM CARBONATE AND CAUSTIC are unchanged.

POTASSIUM PERMANGANATE is in steady demand at 7¼d. to 7¾d. per lb.

POTASSIUM PRUSSIATE is in better demand. Price about 7¼d. per lb.

SODA ACETATE is very scarce, spot supplies commanding £21 to £22 per ton.

SODA BICHROMATE is unchanged.

SODA CHLORATE is a firm market at 3¼d. per lb. and is scarce.

SODA NITRITE is in fair demand at £21 15s. per ton.

SODA PHOSPHATE is unchanged.

SODA PRUSSIATE.—Very quiet, but price is firm at 4¼d. per lb.

SODA SULPHIDE remains weak.

ZINC SULPHATE is unchanged.

Coal Tar Products

There is little change to report in the market for coal tar products from last week, the market generally maintaining a firm tone.

90% BENZOL remains firm at 1s. 9d. per gallon on rails, the motor quality being quoted at the same price.

PURE BENZOL is unchanged at 2s. 1d. to 2s. 2d. per gallon on rails.

CREOSOTE OIL is steady, at 6d. to 6¼d. per gallon on rails in the North, while the price in London is 7d. to 7¼d. per gallon.

CRESYLIC ACID is unchanged from last week, and is quoted at 1s. 10d. to 2s. per gallon on rails for the pale quality 97/99% for export, while the dark quality 95/97% is quoted at about 1s. 8d. to 1s. 9d. per gallon on rails. Pale cresylic acid for the home trade is slightly weaker, and is worth about 1s. 6d. per gallon on rails, while the dark quality is quoted at 1s. 4d. per gallon on rails.

SOLVENT NAPHTHA is firm at 1s. 5d. per gallon on rails.

HEAVY NAPHTHA is quoted at 1s. 1d. to 1s. 2d. per gallon on rails.

NAPHTHALENES are unchanged, the lower grades being worth from £4 to £4 10s. per ton, 76/78 quality about £6 per ton, and 74/76 quality about £5 10s. per ton.

PITCH remains exceptionally firm, and prices have further advanced. To-day's approximate values are 80s. to 90s. per ton, f.o.b. U.K. ports.

Latest Oil Prices

LONDON.—LINSEED OIL, firm and 5s. higher. Spot, £30 10s., ex mill; March and April, £29 7s. 6d.; May-August, £29 7s. 6d.; September-December, £29 12s. 6d. RAPE OIL quiet. Crude crushed, spot, £47 10s.; technical refined, £49 10s. COTTON OIL steady. Refined common edible, £42; Egyptian crude, £35; deodorised, £44. TURPENTINE firm at 6d. to 9d. advance per cwt. American, spot, 65s. 9d.; April, 66s.; May-June, 64s. 9d.; and July-December, 61s. 3d.

HULL.—LINSEED OIL.—Spot to May-August, £29 5s.; Sept.-December, £29 10s. COTTON OIL.—Naked, Bombay, crude, £34 10s.; Egyptian, crude, £34 15s.; edible, refined, £38 5s.; technical, £38. PALM KERNEL OIL.—Crushed, naked, 5½ per cent., £43. GROUNDNUT OIL.—Crushed-extracted, £43; deodorised, £47. SOYA OIL.—Extracted and crushed, spot, £37; deodorised, £40 10s. RAPE OIL.—Extracted and crushed, £46 per ton, net, cash terms. CASTOR OIL.—Pharmaceutical, 51s.; firsts, 46s.; seconds, 43s. per cwt., net, barrels, ex mills.

THE BRITISH INDUSTRIES FAIR this year was so successful that the White City has been booked for 1927 and the Department of Overseas Trade will take over the organisation shortly. It is hoped that Government grant of £25,000 for organisation and publicity purposes, will be repeated next year.

WE HAVE RECEIVED from Plowden and Thompson, Ltd., of Dial Glass Works, Stourbridge, their 1926 catalogue of "Dial" glass-blown and other chemical and laboratory apparatus, covering a large range of requisites. The firm manufactures its blown apparatus from soft soda and resistance soda glasses of invariable composition and also from Pyrex glass.

ALUMINOUS CEMENTS were referred to at a meeting of the Essex Surveyors' Association which took the form of a visit to the Wouldham cement works, West Thurrock, at the invitation of the Cement Marketing Co. Aluminous cement, it was stated, contained a large percentage of bauxite, and was not a true Portland cement like Ferrocrete. Originally it was made only in France, but the British Portland Cement Manufacturers were now making an all-British product known as Lightning cement. This, it was stated, had the same chemical composition as French aluminous cements, and, besides being equal in quality, was sold at a lower price.

Nitrogen Products Market

Export.—During the last week the demand for sulphate of ammonia has continued steadily. Stocks on the Continent are being liquidated and further quantities demanded. The far East is still buying. The price remains firm at £12 10s. per ton f.o.b. U.K. port in single bags.

Home.—Activity in the home market is general throughout the country, and merchants in all districts seem to be securing more orders than last year. The greater demand is no doubt due to the lower price and to the general increased use of fertilisers. Unless the season ends early it looks like being very heavy.

Nitrate of Soda.—There is no change in the nitrate position. Cargoes c.i.f. chief European ports are changing hands at £11 11s. to £11 13s. per ton. Liquidation of stocks is proceeding satisfactorily, and higher prices are being quoted for April arrival.

Prices of Bismuth Salts

MAY AND BAKER, LTD., manufacturing chemists, Battersea, London, advise us of a reduction in the prices of Bismuth Salts, by reason of the cheaper market for Bismuth metal. The quantity prices are as under and apply only for net cash in 14 days without engagement; smaller quantities would be charged extra.

	Under 1 cwt.	Not less than 1 cwt.
Bismuth carbonate	12/9	12/6 lb.
,, citrate	9/9	9/6 ,,
,, nitrate cryst.	7/–	6/9 ,,
,, oxide	14/–	13/9 ,,
,, salicylate	10/6	10/3 ,,
,, subchloride	12/–	11/9 ,,
,, subgallate	10/–	9/9 ,,
,, subnitrate	11/–	10/9 ,,

Special rates are applicable to quantities of 2 cwt. and upwards, either for prompt delivery or deliverable over months, and the various salts may be taken in assorted quantities, as required.

LIQUOR BISMUTHI P.B.	in W. qts.	1/2 lb.
	12 ,,	1/1 ,,
	36 ,,	1/0½ ,,

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

Glasgow, March 12, 1926.

THE Heavy Chemical market has been rather more active during the past week, but quantities asked for are still not large. One or two products show a slight increase, notably barium chloride, carbonate of potash, and white powdered arsenic. Producers of the latter do not seem inclined to quote very far ahead.

Industrial Chemicals

ACID ACETIC.—98/100% quoted £55 to £67 per ton according to quantity and packing c.i.f. U.K. port. 80% pure, £40 to £41 per ton. 80% technical, £38 to £39 per ton, packed in casks, c.i.f. U.K. ports.

ACID BORIC.—Crystal, granulated, or small flakes, £37 per ton. Powdered, £39 per ton, packed in bags, carried paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—In better demand and price advanced to about 5¼d. per lb. delivered or f.o.b. U.K. ports.

ACID CITRIC, B.P. CRYSTALS.—Usual steady demand and price unchanged at about 1s. 3¾d. per lb., less 5% ex wharf.

ACID FORMIC 85%.—Spot material quoted about £49 15s. per ton ex store. Offered from the continent at about £49 per ton ex wharf, prompt shipment.

ACID HYDROCHLORIC.—In little demand. Price 6s. 6d. per carboy ex works.

ACID NITRIC 80%. — Remains unchanged at £23 5s. per ton ex station, full truck loads.

ACID OXALIC 98/100%.—Offered for spot delivery at about 3¾d. per lb. ex store, but this price could probably be shaded. Quoted 3¾d. ex wharf, prompt shipment from the continent.

ACID SULPHURIC.—144°, £3 12s. 6d. per ton; 168°, £7 per ton ex works, full truck loads. Dearsenicated quality, 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—Slightly easier at about 11¼d. per lb. less 5% ex wharf.

ALUMINA SULPHATE 17/18% IRON FREE.—On offer from the continent at about £5 10s. per ton c.i.f. U.K. ports. Spot material available at £6 5s. per ton ex store.

ALUM LUMP POTASH.—Quoted £7 12s. 6d. per ton c.i.f. U.K. ports, prompt shipment. Spot material available at about £9 per ton ex store. Powdered quality offered for prompt shipment at about £7 10s. per ton c.i.f. U.K. port.

AMMONIA ANHYDROUS.—Imported material on offer at about 1s. 1d. per lb. ex wharf. Containers extra and returnable.

AMMONIA CARBONATE.—Lump, £37 per ton; powdered, £39 per ton; packed in 5 cwt. casks delivered or f.o.b. U.K. ports. Industrial quality about £10 per ton less.

AMMONIA LIQUID 880°.—Unchanged at about 2½d. to 3d. per lb. delivered, according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £25 to £26 per ton ex station. On offer from the continent at about £22 per ton c.i.f. U.K. ports. Fine white crystals offered from the continent at about £18 12s. 6d. per ton c.i.f. U.K. ports.

ARSENIC.—In better demand and quoted price slightly advanced. Spot material still available at about £17 per ton ex store. Offered for prompt despatch from works at about £16 15s. per ton ex wharf.

BARIUM CHLORIDE 98/100%.—Higher quotations from the continent. Now quoted £10 per ton c.i.f. U.K. ports.

BLEACHING POWDER.—English material quoted £9 10s. per ton ex station. Contracts 20s. per ton less. On offer from the continent at about £7 10s. per ton c.i.f. U.K. ports.

BARYTES.—English material unchanged at £5 5s. per ton ex works. Continental quoted £5 per ton c.i.f. U.K. ports.

BORAX.—Granulated, £22 10s. per ton; crystals, £23 per ton; powdered, £24 per ton, carriage paid U.K. stations.

CALCIUM.—English manufacturers' price unchanged at £5 12s. 6d. to £5 17s. 6d. per ton carriage paid U.K. stations. Continental material higher at about £4 17s. 6d. per ton c.i.f. U.K. ports.

COPPERAS, GREEN.—Quoted £3 17s. 6d. per ton f.o.b. U.K. ports for export. About £3 10s. per ton f.o.r. works for home consumption.

COPPER SULPHATE 99/100%.—Price for British material, £23 10s. per ton f.o.b. U.K. ports. Moderate inquiry for export. Continental on offer at about £22 per ton ex wharf.

FORMALDEHYDE 40%.—Spot material quoted £39 per ton ex store. Offered for early delivery at £37 10s. per ton c.i.f. U.K. ports.

GLAUBER SALTS.—English material unchanged at £4 per ton ex store or station. Continental on offer at about £3 per ton c.i.f. U.K. ports.

LEAD, RED.—Imported material on offer at about £40 per ton ex store. Quoted £39 15s. per ton c.i.f. U.K. ports, to come forward.

LEAD, WHITE.—On offer at £40 15s. per ton ex store, spot delivery.

LEAD ACETATE.—White crystals on offer from the continent at about £42 10s. per ton c.i.f. U.K. ports. Brown quoted about £38 5s. per ton c.i.f. U.K. ports. Spot material available at about £44 per ton ex store.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton ex station, in moderate demand.

POTASH CAUSTIC 88/92%.—Syndicate prices vary from £25 10s. to £28 15s. per ton c.i.f. U.K. ports, according to quantity and destination. Spot material available at about £29 per ton ex store.

POTASSIUM BICHROMATE.—Unchanged at 4½d. per lb. delivered.

POTASSIUM CARBONATE.—96/98% quality now quoted £25 15s. per ton ex wharf, early delivery. Spot material on offer at about £26 15s. per ton ex store. 90/94% quality quoted £22 15s. per ton c.i.f. U.K. ports.

POTASSIUM CHLORATE.—98/100% crystals offered from the continent at about £30 5s. per ton c.i.f. U.K. ports. Spot material available at £31 10s. per ton ex store. Powdered quality quoted £28 5s. per ton c.i.f. U.K. ports, prompt shipment.

POTASSIUM NITRATE, SALTPETRE.—Quoted £22 15s. per ton c.i.f. U.K. ports, prompt shipment. Spot material available at about £25 10s. per ton ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Spot material quoted 8d. per lb. ex store. Offered for early delivery at 7½d. per lb. ex wharf.

POTASSIUM PRUSSIATE, YELLOW.—In moderate demand. Spot material quoted 7¼d. per lb. ex store, but could probably be obtained for less. On offer for prompt shipment from the continent at 7d. per lb. c.i.f. U.K. ports.

SODA CAUSTIC.—76/77%, £17 10s. per ton; 70/72%, £16 2s. 6d. per ton. Broken, 60%, £16 12s. 6d. per ton; powdered, 98/99%, £20 17s. 6d. per ton. All carriage paid U.K. stations, spot delivery. Contracts 20s. per ton less.

SODIUM ACETATE.—Spot material still very scarce and prices quoted for early delivery advanced to about £20 10s. per ton c.i.f. U.K. port.

SODIUM BICARBONATE.—Refined recrystallised quality, £10 10s. per ton ex quay or station, M.W. quality, 30s. per ton less.

SODIUM BICHROMATE.—English price unchanged at 3½d. per lb. delivered.

SODIUM CARBONATE.—Soda crystals, £5 to £5 5s. per ton, ex quay or station; powdered or pea quality, £1 7s. 6d. per ton more. Alkali, 58%, £8 12s. 3d. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £9 per ton, ex station; minimum 4-ton lots. Pea crystals, £14 5s. per ton, ex station. Continental commercial quality offered £9 per ton, ex store.

SODIUM NITRATE.—Quoted £13 per ton, ex store; 96/98% refined quality, 7s. 6d. per ton extra.

SODIUM NITRITE 100%.—Quoted £24 per ton, ex store. Offered from the continent at about £22 5s. per ton c.i.f. U.K. ports.

SODIUM PRUSSIATE, YELLOW.—In steady demand and spot material now quoted about 4¼d. per lb., ex store. Offered for prompt shipment from the continent at about 4d. per lb. c.i.f. U.K. port.

SODIUM SULPHATE, SALTCAKE.—Price for home consumption, £3 10s. per ton, ex works. Good inquiry for export and higher prices obtainable.

SODIUM SULPHIDE.—60/62% solid, £13 5s. per ton; broken, £14 5s. per ton; flake, £15 5s. per ton; crystals, 31/34%, £8 12s. 6d. per ton. All delivered buyer's works U.K. minimum 5-ton lots with slight reduction for contracts. 60/62% solid quality offered from the continent at about £10 per ton c.i.f. U.K. ports; broken, £1 per ton more; crystals, 30/32%, £7 per ton c.i.f. U.K. ports.

SULPHUR.—Flowers, £11 per ton; roll, £9 15s. per ton; rock, £9 15s. per ton; ground, £9 10s. per ton, ex store, spot delivery. Prices nominal.

ZINC CHLORIDE.—British material 96/98% quoted £23 15s. per ton f.o.b. U.K. port; 98/100% solid on offer from the continent at about £21 15s. per ton c.i.f. U.K. ports. Powdered, 20s. per ton extra.

ZINC SULPHATE.—Continental manufacture on offer at about £11 per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Coal Tar Intermediates and Wood Distillation Products

ALPHA NAPHTHYLAMINE.—1s. 3d. per lb. Good home inquiries.

PARANITRANILINE.—1s. 8d. to 1s. 9d. per lb. Good home inquiries.

PARA AMIDO ACETANILIDE.—4s. per lb. Some home inquiries.

ORTHONITROTOLUOL.—5d. per lb. Some home inquiries.

XYLIDINE.—1s. 11d. to 2s. per lb. Small home inquiries.

Manchester Chemical Market

(From Our Own Correspondent.)

Manchester, March 12, 1926.

The demand for chemicals on the Manchester market keeps very quiet, and careful inquiry among traders here discloses little hope of a bigger volume of trade until the coal trade problem and the engineering dispute are settled. The depressing effect that these factors have had upon all markets here is an example of the psychology of modern business. Another perplexing matter from the point of view of the chemical trade is the announced decision of the Short Time Committee to ballot spinners of American cotton as to the desirability of reverting to longer working hours again. The state of the textile markets certainly does not warrant an increased output at the present time, and it will be interesting to have the promised official explanation of this new proposal which is arousing a considerable amount of speculation.

Heavy Chemicals

Phosphate of soda is quoted at £12 15s. per ton, but the demand for this is rather quiet. Saltcake is a slow seller but there is no change in prices, which keep round £3 per ton. Glauber salts are dull and inactive at £3 5s. per ton. There is the usual moderately steady demand for caustic soda at from £15 2s. 6d. for 60 per cent. strength to £17 10s. for 76-77 per cent. Hyposulphite of soda shows little change on the week and business in this material is limited ; commercial is still on offer at £9 10s. per ton and photographic quality at about £14 5s. There is a certain amount of trade being done in bleaching powder at £8 10s. per ton. Soda crystals continue to be offered at £5 5s. per ton, and a quietly steady demand is being met with. The price of bicarbonate of soda shows no change at £10 10s. per ton, though inquiry for this continues slow. There is not much trade passing in acetate of soda, but rates are well maintained at round £21 per ton. Prussiate of soda is steady and in moderate request at 4¼d. per lb. Bichromate of soda is quiet and has rather an easy tendency, with 3¾d. per lb. now quoted. Chlorate of soda is on offer at about the same figure, but in this case also demand has been quiet. Alkali is fairly active and quotations are steady at round £6 15s. per ton. Sulphide of sodium is quoted at about £11 15s. per ton for 60-65 per cent. concentrated solid and £9 12s. 6d. per ton for crystals, but there is only a slow movement in this material.

Among the potash compounds permanganate is quiet and rather easier at 5¼d. for the commercial and 7¼d. per lb. for the B.P. quality. Carbonate of potash continues very firm again and £26 10s. per ton for the 96 per cent. material is the current quotation. Caustic potash is in limited demand, but values are quite steady at round £27 10s. per ton for 90 per cent. strength. Bichromate of potash continues to attract comparatively little attention at 4¼d. per lb. Yellow prussiate of potash is in quietly steady request at 7¼d. per lb. Chlorate of potash is well held at round 4d. per lb.

Arsenic continues very slow though fairly steady at £14 per ton, f.o.r., for white powdered, Cornish makes. Sulphate of copper is slightly more active than it has been for some time at £24 5s. per ton. Commercial epsom salts are quoted at about £3 15s. per ton, with demand on a moderate scale ; magnesium sulphate, pharmaceutical quality, is steady at about £4 10s. per ton. Acetate of lead is quiet, but with supplies rather short prices are maintained, white being round £44 and brown at £39 to £40 per ton. Nitrate of lead keeps fairly steady at £40 to £41 per ton. Grey acetate of lime is rather quiet at £17 10s. and brown at £8 5s. to £8 10s. per ton.

Acids and Tar Products

There is surprisingly little movement in tartaric acid just now, and at 11¼d. per lb. values are inclined to be easy. Citric acid also is quiet but fairly steady at 1s. 3¼d. to 1s. 3½d. per lb. Acetic acid is in limited demand although steady at £37 per ton for 80 per cent. commercial, with glacial still on offer at £67 per ton. Oxalic acid is in moderate request at 3¾d. per lb.

The Manchester f.a.s. price for pitch is fully maintained at round 75s. per ton, and demand is still fairly brisk. Carbolic acid is dull and easy at 5d. per lb. for crystals and 1s. 5d. per gallon for crude material. Creosote oil is quiet but steady at 6¼d. per gallon. Solvent naphtha is about unchanged in position or value at 1s. 6d. to 1s. 6½d. per gallon.

Courtaulds' Artificial Silk Prospects

International Agreements

Mr. S. Courtauld, chairman, presiding at the annual meeting of the ordinary shareholders of Courtaulds in London on Friday, March 5, said that the weight of artificial silk yarn made was appreciably greater than in 1924. With regard to the duties, he thought that these would not in the long run cause any damage, but they should not be altered or abolished, as the industry needed to be left alone. The rapidly growing competition might lower prices, but they did not feel their position to be menaced. Many of the new enterprises lacked experience. "Artificial wool" was no new thing. It was simply a very common quality of non-continuous artificial silk fibre which had not been completely "finished." For years they had sold such fibre, and it ranked for duty as "artificial silk waste." He doubted the possibilities of this yarn ; but if it did develop, they could soon expand production.

Their Canadian factory had nearly reached its final output, and the quality was very satisfactory. A French company had been formed, with works at Calais. In Germany they had made an agreement with the Vereinigte Glanzstoff Fabriken and the joint concern was to erect a factory near Cologne. It was stated later in the proceedings that the reports that Courtaulds were negotiating with the great Snia Viscosa Co. were unfounded. In the United States the American Viscose Co. had had a good year, with increases in weight of yarn made and sold over 1924. The Roanoke works were being extended, and a fourth viscose factory was to be erected at Parkersburg, West Virginia.

Mr. F. J. Nettlefold and Mr. J. S. Addison were re-elected directors.

Further Artificial Silk Developments

It is reported that an Italian company are inquiring the possibilities of a site at Darlington.

Sir W. Bulmer, chairman, speaking at the statutory meeting of the Bulmer Rayon Co., Ltd., at Stowmarket last week, said that both viscose and collodion processes were producing commercially, and the silk was equal to any British product. It also possessed exceptional dyeing properties. The company was exhibiting at the Artificial Silk Exhibition in April. They were keeping up with developments in artificial wool and other moves were pending, full particulars of which would be announced. He looked forward to future progress with confidence.

Negotiations are reported between the German Vistra Co. and the American du Pont Rayon concern.

It is reported that a company is considering Paisley as a site for an artificial silk factory.

At the special general meeting convened by British Celanese, Ltd., on Tuesday, the two resolutions submitted at the instance of the Cellulose Holdings and Investment Co. were defeated by overwhelming majorities. These resolutions asked for a committee of inquiry, and for the removal from the board of British Celanese, Ltd., Drs. H. and C. Dreyfus, Mr. A. Clavel, and Sir A. Trevor Dawson.

Nitrogen Fixation in France

According to *La Revue des Produits Chimiques* of January 31, 1926, the first draft of a law for the creation of the "Société National de l'Azote" (National Nitrogen Co.) is before the French Chamber. It provides for an initial capital of 250 million francs, of which 125 millions will be held by the state and 125 millions, in the form of "B"shares, will be offered for public subscription. The board will comprise a maximum of 16 members, eight each representing the state and the "B" shareholders. The president of the company will be designated by the Minister of Public Works, and will have a casting vote. The total credits of 150 million francs already voted will probably be absorbed by July 1, and for the realisation of the programme of a daily fixation of 100 metric tons of nitrogen the total charges are likely to be 175 million francs. The "B" shares will have an interest of 6 per cent., guaranteed by the state; 6 per cent. will then be payable to the "A" shares. In any higher benefits the "A" shares partake on a progressive scale, while the maximum dividend of the "B" shares is limited to 9·73 per cent.

Company News

TORBAY PAINT CO.—For the year ended December 31 last a dividend of 8 per cent., less tax, is announced.

ASSOCIATED PORTLAND CEMENT MANUFACTURERS.—A dividend of 6 per cent. is recommended on the ordinary shares for the past year.

BRITISH PORTLAND CEMENT MANUFACTURERS.—A final dividend of 10 per cent. is proposed on the ordinary shares, making 15 per cent. for the year 1925.

AMERICAN CYANAMID CO.—A dividend of 1½ per cent. has been declared on the preferred stock, and 1 per cent., plus ½ per cent. extra, on the common stock, payable on April 1.

LAUTARO NITRATE CO., LTD.—A first interim dividend out of the profits for the year ending December 31 last of 5 per cent. or 5s. per share, less income tax, has been declared, payable on March 25.

DOMINION TAR AND CHEMICAL CO.—A final dividend is announced of 5¾ per cent., less British tax, less Dominion relief, or a deduction of 2s. in the £1, making a total of 11¼ per cent. for the year.

SALT UNION, LTD.—The directors recommend a dividend of 2s. 4d. on the preference shares and 2s. 6d. on the ordinary shares. They propose to place £50,000 to general reserve, £40,000 to contingencies, and to carry forward £23,000.

ACHILLE SERRE.—After allowing for bad and doubtful debts, charging repairs and replacements, etc., the net profits for the year ending December 31 last, including the balance brought forward, amount to £22,722. The directors recommend a further dividend of 5 per cent. on the ordinary shares, making 15 per cent. for the year.

UNITED TURKEY RED CO.—The net profits for 1925 were £182,732, which with £32,252 brought forward makes a total of £214,984. A final dividend of 7 per cent. is proposed on the ordinary shares, making 10 per cent. for the year. A sum of £15,000 is placed to income-tax fund, £40,000 to the reserve and £10,000 to the contingency account, leaving £39,671 to be carried forward.

BLEACHERS' ASSOCIATION.—It is announced that the directors of the Association have decided to recommend the capitalisation of £1,422,651, part of the undivided profits of the company standing to credit of the general reserve, the new capital to be distributed as bonus shares to the ordinary shareholders in the proportion of three bonus shares for every five ordinary shares now held.

CEREBOS, LTD.—The profit for the year to November 30 last amounted to £88,092, to which is added a balance from last year of £28,930, making £117,022. The directors recommend a dividend of 15 per cent., free of tax, transferring to the reserve fund £30,000 and to staff pension £10,000, leaving a balance to be carried forward of £32,022. The annual meeting will be held on March 17 in Newcastle, at 12 noon.

JOSEPH CROSFIELD AND SONS, LTD.—The report for the year ending November 30, 1925, states that after charging repairs, renewals and alterations, depreciation and insurance, credit balance appropriated as follows: dividend on 5 per cent. cumulative preference shares, £20,000; dividend on 6 per cent. cumulative preference shares, £30,000; dividend on 6½ per cent. cumulative preference shares, £65,000; dividend on 7½ per cent. A cumulative preference shares, £112,500; dividend on ordinary shares at the rate of 10 per cent., £100,000, leaving to be carried forward £55,589.

BRITON FERRY CHEMICAL AND MANURE CO.—The accounts for the year 1924 show, after providing £8,355 for the third instalment in respect of debenture redemption, and charging £7,500 for depreciation, £4,563 for dividend on preference shares, transferring £3,000 to plant renewal account and £1,000 to reserve, there remains a credit balance at profit and loss account, including balance from the previous year, of £11,414, out of which the directors recommend the payment on March 20 of a dividend of 1s. per share, less tax, on the ordinary shares. The annual meeting will be held at Queen Street Place, London, on March 16, at 2.30 p.m.

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us by Mr. H. T. P. Gee, Patent and Trade Mark Agent, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the Registration of the following trade marks can be lodged up to March 17, 1926.

"AGANITE."

465,680. Ammonium salt for use in manufactures, photography or philosophical research. Class 1. Wallace and Tiernan Co., Inc. (a Corporation organised under the laws of the State of New York, United States of America), 1, Mill Street, Newark, State of New Jersey, United States of America; manufacturers. December 29, 1925.

"ADORNA."

466,555. For chemical substances used in manufactures, photography or philosophical research, and anti-corrosives. Class 1. Lewis Berger and Son, Ltd., 201, Morning Lane, Homerton, London, E.9; manufacturers. January 28, 1926.

"SPRALAX."

466,245. For paints and enamels. Class 1. Major and Co., Ltd., 12, Norfolk Street, Strand, London, W.C.2; manufacturers. January 19, 1926.

"MOTHEX."

465,998. For moth repelling and destroying preparations. Class 2. Knapp and Wehrle, Gueterstrasse 155, Basle, Switzerland; druggists and manufacturing chemists. January 11, 1925.

"GLACIER."

465,825. For talc (raw or partly prepared) for use in manufactures. Class 4. Joseph Walker, Kenyon and Co., Ltd., 10, Norfolk Street, Manchester, Lancs; manufacturers. January 5, 1926.

"CANCO."

465,085. For starch for use in the manufacture of adhesives. Class 4. B. Cannon and Co., Ltd., Witham Works, Gaunt Street, Lincoln; manufacturers and merchants. December 8, 1925.

"MOLDAS."

466,582. For raw, or partly prepared, vegetable, animal and mineral substances used in manufactures. Class 4. John Brentnall, trading as The Casr Nameplate Co., 2, Cross Road Winton, Patricroft, Manchester; manufacturer. January 29, 1926.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

CHEMICALS.—Commission agents in Gothenburg desire representation of British manufacturers of chemicals used in manufacture of paper and pulp, soap, drugs, and medicines. (Reference 288.)

DRUGS.—The Siamese Department of Health invite tenders by May 1 for supplies of drugs. (Reference B.X. 2394.)

TAR, PAINTS, ETC.—For the supply of cement, lime, tar and pitch, residual bitumen, paints, oils, and varnish, lead and glass, for Hull C.C. Forms from City Engineer's Office, to be returned by March 17.

DISINFECTANTS.—For the supply of disinfecting powder, fluid, 40 per cent. formaldehyde, and carbolic soap, for Dewsbury County Borough. Tenders (no forms required) to Town Clerk by March 20.

DRUGS.—For the supply of drugs for Manchester. Forms from Public Health Officer, Mount Street, returnable by March 17.

TAR.—For the supply of 50,000 galls. of dehydrated tar, for Woking U.D.C. Tenders by March 19.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[*NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.*]

D. AND L. MANUFACTURING CO., LTD., 68A, Western Road, Plaistow, chemical manufacturers. (C.C., 13/3/26.) £65 3s. 3d. January 25.

HARDIES (MANCHESTER), LTD., Bulls Head Yard, Corporation Street, Manchester, oil refiners. (C.C., 13/3/26.) £10 9s. 4d. January 29.

PATERSON AND CO. (DYERS AND FINISHERS), LTD., Holbeck Mills, Leeds, dyers. (C.C., 13/3/26.) £28 19s. 1d. February 5.

Mortgages and Charges

[*NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.*]

BRACEWELL (J. W.) AND CO., LTD., Ramsbottom, chemical manufacturers. (M., 13/3/26.) Registered February 18, £2,000 debenture to Cromptons (Stubbins), Ltd., Stubbins Paper Mill, Ramsbottom, general charge.

BRITISH TAROLEUM CO., LTD., Manchester, tar manufacturers. (M., 13/3/26.) Registered February 25, £2,000 first debenture to R. Dobson and another, Mosley Street, Manchester; general charge.

JOHNSON MATTHEY AND CO., LTD., London, E.C., refiners, etc. (M., 13/3/26.) Registered February 24, £15,000 debenture stock; charged on properties at Hatton Garden, E.C., etc.; also general charge. *£299,887. May 7, 1925.

PHILLI-MARANO, LTD., London, S.W., chemists. (M., 13/3/26.) Registered February 24, £2,500 debenture, to D. J. Phillips, San Marino, Upper Tooting Park, S.W.; general charge. *Nil. December 31, 1925.

Receivership

KEELINGS OXIDES (1921), LTD. (R., 13/3/26.) F. W. Carder, of Victoria Chambers, Liverpool Road, Stoke-on-Trent, was appointed Receiver on February 22, 1926, under powers contained in debenture dated February 20, 1923.

London Gazette, &c.

Company Winding Up Voluntarily

LABORATOIRE DE MICROBIOLOGIE, LTD. (C.W.U.V., 13/3/26.) F. H. Williamson, 264-273, Salisbury House, London Wall, London, E.C.2, appointed liquidator February 4. Meeting of creditors at liquidator's office, on Wednesday, March 17, at 11 a.m.

Business Names Registered

[*The following (trading name and address, nature of business, date of commencement, and proprietors' names and addresses) have been registered under the Registration of Business Names Act.*]

VERMIN AND PEST DESTROYING CO., 10, Hockenhall Alley, Dale Street, Liverpool. Manufacturers of vermin and pest destroying solution. December 1, 1925. Archie Walworth Bell, 22, Gorton Road, Liverpool; Edward Walworth Bell.

New Companies Registered

BURMAH CANDLE CO., LTD., 22 Great St. Helen's, London, E.C.3. Registered March 5, 1926. Producers of and dealers in candles, oils, greases, glycerine, soap, etc. Nominal capital, £300,000 in £1 shares.

M. C. FOISTER, CLAY AND WARD, LTD., 91, Great Central Street, Leicester. Registered March 4, 1926. Silk winders, manufacturers, spinners, etc., of silk artificial silk, etc.; bleachers, dyers, makers of vitriol and bleaching and dyeing materials, etc. Nominal capital, £550,000 in 250,000 cumulative preference and 250,000 participating ordinary shares of £1 each and 1,000,000 deferred shares of 1s. each.

NIGOTHIA TANNING CO., LTD., 118, Weston Street, Bermondsey, London, S.E.1. Reg. March 6, 1926. To acquire and turn to account an invention relating to the tanning of leather, the manufacture of tanning extracts, or otherwise relating to the tanning industry. Nominal capital, £1,000 in 1s. shares.

PRICE AND SONS, LTD., Tower Varnish Works, Long Acre, Birmingham. Registered March 5, 1926. Metal workers, annealers and welders, etc.; manufacturers of and dealers in paint, enamel, varnish, colour, chemical products, etc. Nominal capital, £100 in 1s. shares.

REDMANOL, LTD., Victoria Station House, Victoria Station, London, S.W. Registered March 3, 1926. Manufacturers of and dealers in organic and inorganic chemical substances and products, natural or synthetic plasters and plastic substances, and any phenolic condensation products, etc. Nominal capital, £100 in £1 shares.

WELLSON AND CO., LTD. Registered March 6, 1926. Manufacturers of artificial manures and fertilisers, etc. Nominal capital, £2,000 in 1,000 6 per cent. cumulative preference and 1,000 ordinary shares of £1 each. Solicitors: Scholefield, Taylor and Maggs, Batley.

"Flowers of Sulphur" Prosecution Result

THE hearing concluded at Surrey Assizes on Thursday, March 4, of the Merchandise Marks Act Prosecution against Robinson Brothers, Ltd., West Bromwich, for using an alleged false trade description, namely, flowers of sulphur, to a product not obtained by sublimation (see THE CHEMICAL AGE, December 19, 1925, January 9, and March 6, 1926). The jury found for the plaintiff, and Mr. Justice Horridge imposed a penalty of £50, and directed defendants, who wanted the case tested, to pay the costs. Notice of appeal was given.

The Sale of Ethyl Gasoline

AS reported in THE CHEMICAL AGE some time ago, a committee was appointed in the United States to examine the dangers arising out of the use of ethyl gasoline (petrol containing lead tetraethyl as an "anti-knock"). A number of individuals who had been engaged in the industry were kept under observation. The committee (according to *Chemical and Metallurgical Engineering*) has reported that "there are at present no good grounds for prohibiting the use of ethyl gasoline of the composition specified (1 in 1,300) as a motor fuel, provided that its distribution and use are controlled by proper regulations." Various means of improving the methods of distribution of ethyl gasoline and of preventing its misuse are suggested. As a result of the report, there will be a resumption of the distribution of the product, under careful control.

Searching for Oil in Australia

ON Tuesday before the Institution of Petroleum Technologists, Dr. A. Wade read a paper on "The Search for Oil in Australia." As a result of an exhaustive review of the evidence, the author, who had himself been engaged in investigations in Australia, pointed out that there was some conflict of opinion as to the prospect of finding oil. Opinions based on broad generalisations were unfavourable, while those based on conditions existing in particular areas were more favourable. Australia could not afford to leave the matter in doubt. Until recently, about 80 per cent. of petroleum products used in Australia were imported from America, the rest coming from the Dutch East Indies, but to-day the Anglo-Persian Company, in partnership with the Commonwealth Government, was obtaining an increasing share of the business, the oil being imported from the Persian Gulf. It was urgently necessary to obtain internal supplies if possible.